STUDY OF CIVIL WORKS

NO. 82-17

HEARINGS

BEFORE THE

SUBCOMMITTEE TO STUDY CIVIL WORKS

OF THE

COMMITTEE ON PUBLIC WORKS
HOUSE OF REPRESENTATIVES

EIGHTY-SECOND CONGRESS

SECOND SESSION

LAW LIBRARY
UNIV. OF MICH.
JUL 31 1952

Part 3—Federal Power Commission, Department of the Interior, Tennessee Valley Authority, Engineers' Joint Council, National Water Conservation Conference, et al.

SUBCOMMITTEE TO STUDY CIVIL WORKS

ROBERT E. JONES, Jr., *Chairman*

HENRY D. LARCADE, JR., Louisiana
CLIFFORD DAVIS, Tennessee
FRANK E. SMITH, Mississippi
THADDEUS M. MACHROWICZ, Michigan
GEORGE A. DONDERO, Michigan
HOMER D. ANGELL, Oregon
RUSSELL V. MACK, Washington
HOWARD H. BAKER, Tennessee

CHARLES D. CURRAN, *Staff Director*

APRIL 30, MAY 2, 6, 7, 14, 15, AND 16, 1952

Printed for the use of the Committee on Public Works

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1952

COMMITTEE ON PUBLIC WORKS

CHARLES A. BUCKLEY, New York, *Chairman*

HENRY D. LARCADE, JR., Louisiana
GEORGE H. FALLON, Maryland
CLIFFORD DAVIS, Tennessee
JAMES W. TRIMBLE, Arkansas
JOHN A. BLATNIK, Minnesota
ROBERT E. JONES, JR., Alabama
JOHN J. DEMPSEY, New Mexico
FRANK E. SMITH, Mississippi
JOHN C. WATTS, Kentucky
CLARE MAGEE, Missouri
THADDEUS M. MACHROWICZ, Michigan
JOHN C. KLUCZYNSKI, Illinois
TOM STEED, Oklahoma
VERA BUCHANAN, Pennsylvania

GEORGE A. DONDERO, Michigan
HOMER D. ANGELL, Oregon
J. HARRY McGREGOR, Ohio
JAMES C. AUCHINCLOSS, New Jersey
J. GLENN BEALL, Maryland
RUSSELL V. MACK, Washington
CHARLES W. VURSELL, Illinois
HUBERT B. SCUDDER, California
MYRON V. GEORGE, Kansas
WILLIAM G. BRAY, Indiana
HOWARD H. BAKER, Tennessee
JOHN T. WOOD, Idaho

JOSEPH H. McGANN, SR., *Chief Clerk*

CONTENTS

Statement of—

	Page
Adams, Francis L., Chief, Bureau of Power, Federal Power Commission	389
Buchanan, Thomas C., Chairman, Federal Power Commission	389
Clapp, Gordon R., Chairman of the Board, Tennessee Valley Authority	613, 633, 649
Eardley, E. P., Chief Engineer, Division of Water and Power, Office of the Secretary, Department of the Interior	489
Frederickson, Fred J., North Dakota State Water Conservation Commission	595
Gatchell, Willard W., Assistant Chief Counsel, Bureau of Law, Federal Power Commission	389
Heidrich, George R., National Association of Soil Conservation Districts	595
Hoak, Dr. R. D., Mellon Institute of Industrial Research, Pittsburgh, Pa., chairman, hearings committee, Engineers Joint Council	535
Macleay, Lachlan, president, Mississippi Valley Association	595
McBride, Don, manager, Oklahoma Water Development Association	595
McWhorter, Roger B., Chief Engineer, Federal Power Commission	389
Rising, E. W., vice president, National Water Conservation Conference	595
Scheidenhelm, F. W., consulting hydraulic engineer, New York, N. Y.	535
Searles, Richard D., Under Secretary of the Interior	489
Smith, Charles W., Chief, Bureau of Accounts, Finance, and Rates, Federal Power Commission	389
Smith, Nelson Lee, Commissioner, Federal Power Commission	389
Straus, Michael W., Commissioner, Bureau of Reclamation, Department of the Interior	457
Tomlinson, George E., Assistant Director of Project Planning, Bureau of Reclamation, Department of the Interior	457, 489
Webb, William H., executive vice president, National Rivers and Harbors Congress	595
Welsh, William E., manager, National Reclamation Association	595
Whitman, E. B., Whitman, Requardt & Associates, engineers, Baltimore, Md	535

Additional information submitted for the record by—

American Public Power Association, letter from Alex Radin transmitting recommendations and resolutions	687
Engineers Joint Council, statement of	536
Federal Power Commission:	
Attendance at meetings of work group on allocation of costs, FPC offices, March 10, 11, and 12, 1952	408
Comparison of results of cost allocation studies made by SPA and by Corps of Engineers on—	
Blakely Mountain	409
Bull Shoals	412
Dardanelle project	413
Denison project	414
Fort Gibson project	409
Keystone	411
Narrows project	410
Norfork project	412
Short Mountain project	415
Southwestern Power Administration data	426
Table Rock project	410
Tenkiller Ferry project	413

Additional information submitted for the record by—Continued
Federal Power Commission—Continued
Comparison of results of cost allocation studies made by SPA and by Corps of Engineers on—Continued Page
United States Corps of Engineers data 426
Whitney project 414
Explanatory statement concerning authority under the Federal Power Act to impose conditions in the interest of flood control 441
Letter from Thomas C. Buchanan, Chairman, to Mr. Jones 452
Memorandum—Allocation of costs for Southwest projects 418
Report of work group on allocation of costs for 12 multiple-purpose projects in the Southwest 406
Results of cost-allocation studies for 12 Southwest projects 417
Staff consideration of problems relating to allocation of costs for multiple-purpose projects 415
Interior Department:
Answers to questions submitted to Department by subcommittee 510–524
Capacities of Army reservoirs in the Missouri River Basin, table 471
Comparison of cost indexes, chart 464
Cost indexes for construction work, table 463
Memorandum: Establishment of power rates—Missouri River project 505
International Boundary and Water Commission, letter from in reply to questions of subcomimttee through Department of State 527
National Water Conservation Conference:
Estimate of appropriation needs for watershed works of improvement, table 593
Flood control, table 586–588
Program cost per year, table 594
Rivers and harbors projects, table 589, 590
Statement of E. W. Rising 583
Suggested list of reclamation projects which should be included in program for construction, table 591
Supplemental statement relating to reclamation projects 591
Supplemental statement relating to watershed programs 592
Surveys completed—reports expected to be transmitted to Congress by July 1, 1952, table 594
New Hampshire Electric Cooperative, Inc., letter from George H. Duncan, president 684
State Department: Letters in reply to questions submitted by subcommittee 524, 525
Tennessee Valley Authority:
Chemical engineering activities 665
Comparison of estimates with actual costs, all major TVA constructed projects, table
Letter from John Oliver, General Manager, in reply to questions submitted by subcommittee 614
Statement summarizing scope and results of TVA activities 676
United States Chamber of Commerce, letter from Clarence R. Miles, transmitting statement 684

STUDY OF CIVIL WORKS

FRIDAY, MAY 2, 1952

COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE TO STUDY CIVIL WORKS,
Washington, D. C.

The special subcommittee met, pursuant to adjournment, at 10:05 a. m., in room 1302, New House Office Building, Hon. Robert E. Jones, Jr., presiding.

Charles D. Curran, staff director.

Mr. DAVIS. Mr. Jones is apparently unavoidably delayed, but because the present occupant of the chair knows Mr. Buchanan is a very, very busy man always and especially in these days, I am going to ask him to come around because we are trying to build a record, Mr. Chairman, and we can save your time. Also the other members will avail themselves, of course, of the printed record. So if you do not mind with a very small beginning in numbers we will get under way.

STATEMENTS OF THOMAS C. BUCHANAN, CHAIRMAN, FEDERAL POWER COMMISSION; NELSON LEE SMITH, COMMISSIONER, FEDERAL POWER COMMISSION; CHARLES W. SMITH, CHIEF, BUREAU OF ACCOUNTS, FINANCE, AND RATES, FEDERAL POWER COMMISSION; FRANCIS L. ADAMS, CHIEF, BUREAU OF POWER, FEDERAL POWER COMMISSION; ROGER B. McWHORTER, CHIEF ENGINEER, FEDERAL POWER COMMISSION; AND WILLARD W. GATCHELL, ASSISTANT CHIEF COUNSEL, BUREAU OF LAW, FEDERAL POWER COMMISSION

Mr. BUCHANAN. If that is your pleasure we will be glad to go right ahead.

I have, Mr. Chairman, a prepared statement which I will read into the record, if that is acceptable.

Mr. DAVIS. Mr. Chairman, this is quite a lengthy statement and I know it will be a thorough one. May I suggest that you read for a little while. I should not ask you to take the time to read it all, but as one or two other members of the committee come in then I would suggest that we refrain from listening to all of your prepared statement and then you can make certain high-light observations in your judgment, if that suits you.

Mr. BUCHANAN. That would be all right.

Mr. DAVIS. Then, of course, the entire statement would be made a part of the record.

Mr. BUCHANAN. Mr. Chairman and members of the subcommittee, responding to your recent invitation I am pleased to appear before you today on behalf of the Federal Power Commission and inform you in some detail regarding the relationship between the Commission's primary responsibilities and its activities in connection with Federal programs for the development and utilization of water resources.

It is hardly necessary to remind you that the Commission is concerned primarily with its licensing and regulatory functions. In addition, however, it has been given statutory responsibilities for the performance of other duties relating to the development and utilization of the water resources of the Nation, particularly with respect to Federal multiple-purpose water-control projects.

Under part I of the Federal Power Act, the Commission issues licenses to citizens, corporations, States, and municipalities authorizing the construction, operation, and maintenance of water-power projects on streams over which the Congress has jurisdiction and on the public domain. It is necessary under the act that each project so licensed shall be best adapted in the judgment of the Commission to a comprehensive plan for the development and utilization of the water resources involved, and in order to arrive at such judgments it is obviously necessary that the Commission carefully investigate each applicant's proposed works to ascertain whether they meet the requirements of the act. In the conduct of such investigations, which incidentally are absolutely essential to the proper administration of the act, the Commission and its staff quite naturally gain much information which proves to be very valuable in the discharge of the Commission's responsibilities with respect to Federal reservoir projects involving power development.

Section 4 (a) of the Federal Power Act authorizes the Commission to make investigations concerning the location, capacity, development costs, and relation to markets of water-power sites in the United States, and collect data concerning the utilization of water resources; and section 4 (c) thereof authorizes the Commission to cooperate with the executive departments and other agencies of the National Government and with State governments in the conduct of such investigations. Here, and in flood control and river and harbor legislation, we find the statutory authority for the Commission's activities relating to Federal water-control projects performed in cooperation with other departments of the Government, principally the Department of the Army and the Department of the Interior.

The Commission must consider, in the case of each application for a complete water-power project, the question of economic feasibility, including marketing problems, and the safety and adequacy of the proposed construction; and if a license is to be issued, must fix the dates for beginning and completing construction, and, with due consideration to water use for purposes other than power production, determine the initial and ultimate power installations.

Proper consideration of such applications requires basin-wide investigations and power-market surveys. In these licensing studies the Commission's staff does not do field work of the character of foundation explorations or instrumental surveys, but relies principally upon basin-wide investigations previously made by other Federal agencies and upon engineering data supplied by applicants. The

reports of investigations made by other Federal agencies generally deal primarily with projects and programs providing for municipal water supply, navigation, flood control, irrigation, and other public purposes.

An intimate knowledge of the characteristics and magnitude of the power market to be served from a new project is of prime importance in the determination of the initial and ultimate power installations. A hydroelectric plant backed by a reservoir of substantial capacity is normally operated to carry peak loads, and moreover is like a storage battery in that the entire installed capacity thereof may be brought into service quickly when generating facilities elsewhere in the system go out of commission because of accident or for other reasons. It is desirable, therefore, generally speaking, to make liberal provision for installed capacity in such plants, although the installation of only a minor part of the contemplated ultimate capacity may be justified initially. It is generally the capacity value of storage hydroelectric projects that contributes most importantly to their economic feasibility, and as to each such project provision for the ultimate power installation is made only after thorough consideration of the present and probable future characteristics of the load to be served.

Information gained from power market and river basin surveys made in the exercise of the licensing function has also proved to be very valuable to the Commission in connection with its regulatory activities, particularly those relating to the interconnection and coordination of power systems, and emergency connections during periods of national stress.

Thus it is seen that as a result of the exercise of its licensing and regulatory functions the Commission is always well prepared to render a valuable consulting and advisory service not only to the construction agencies but also to the President, the Congress, and the Bureau of the Budget, all of whom have on many occasions availed themselves of the objective consideration which the Commission, as a nonoperating and nonconstructing agency, is able to bring to proposals for water resource development; and this advisory service entails but little expense in addition to that necessary for the proper discharge of the Commission's primary responsibilities.

The Federal Power Commission is the only agency of the Federal Government authorized by law to collect information on all aspects of the electric power industry throughout the United States, including complete details on generating plants, transmission lines, operating characteristics, interconnections, and so forth, of every power facility regardless of size or ownership (see sec. 311 of Federal Power Act). If public and private hydroelectric developments, including Federal projects, are to be planned intelligently and designed for economical integration into regional power systems, this particular knowledge must be utilized fully. The Commission is, therefore, in a unique position to provide information on power planning for the benefit of other agencies of the Federal Government and for the information of the Congress and the public, a service which is necessary to the full utilization of our power resources in the interest of both the national defense and the peacetime economy of the Nation.

The several subjects upon which you desire the Commission's comment will now be taken up and discussed.

PROCEDURES FOR THE AUTHORIZATION AND CONSTRUCTION OF PROJECTS

The Commission's responsibilities do not extend to the construction of Federal water-control projects and hence the Commission is not officially concerned with that subject. It has a very direct interest, however, in the procedures which lead to the authorization of such projects by the Congress.

It has been noted that in the past the authorization of projects by flood control and river and harbor acts have taken a number of forms, including (1) authorization of single projects; (2) authorization of entire river-basin plans; and (3) approval of basin plans with authorization granted for only those projects considered desirable for initiation of the program. The Commission regards the latter method as preferable.

Under this procedure the Congress would give its approval to a basin plan as a guide to Federal agencies concerned with the development of water resources, including the issuance of licenses authorizing non-Federal participation therein; but the Congress would be free to modify the plan at any time to incorporate improvements. The object of water resources development planning should be to achieve maximum utilization of the available water resources.

Water resources development planning, in order to be fully effective, must be accommodated to economic and social changes, whether anticipated or not, and by confining congressional authorization for Federal construction to those needed developments which can be shown to achieve maximum utilization of water-power resources, within the limits of available Federal funds, Congress will be reserving to itself complete freedom of action, thus assuring more orderly and more complete development of the resources. It would seem better to defer authorizations of projects within approved basin-wide plans until early construction thereof is definitely contemplated.

PROJECT FORMULATION

Proposals for the development of water power are viewed by the Commission in the light of their adaptability to basin-wide comprehensive use of the water resources for power production and other beneficial public purposes, this course being required by the Federal Power Act. Aside from this requirement of law, however, the Commission is in full agreement with the concept of multiple-purpose comprehensive development of the Nation's water resources.

As previously indicated, the Commission participates in the formulation of Federal reservoir projects by serving as consultant and adviser to the construction agencies which are primarily responsible for the investigation and construction of such projects.

The Flood Control Act of June 28, 1938, and subsequent flood control and river and harbor acts charged the Commission with joint responsibility with the Chief of Engineers, United States Army, for recommendations to the Secretary of the Army with respect to the installation of penstocks or other facilities adapted to possible future use in the development of hydroelectric power at the dams authorized by such acts.

I might say at this point this authority should be continued. It even might be broadened to include reclamation projects and projects

that come within the jurisdiction of the Department of the Interior. We can see no difference between the two construction approaches.

It is not possible to determine whether the installation of penstocks for the preservation of power values inherent in a reservoir project would be justified without making thorough engineering studies of the power potentialities of the project; nor is it possible to determine whether the proposed reservoir would constitute a proper part of a comprehensive plan for development of the water power resources of the river basin wherein the project is located without making such studies.

Mr. DAVIS. Mr. Chairman, if there would be no objection I am still laboring on your observation that that joint responsibility may well be extended to the Department of the Interior. I think that is rather significant.

Mr. Curran is our professional staff member. Mr. Curran, have you given any thought to that particular feature and, if so, should like to have you pursue it for the benefit of the chairman because I think it is rather significant.

Mr. CURRAN. Mr. Davis, that is a specific item that I thought should be brought up at this hearing. As I understand it, under law the Federal Power Commission is required to work with the Corps of Engineers to determine whether or not penstocks should be installed at the dams built by the Corps of Engineers and whether or not there are any hydroelectric potentialities. Your question, or the question that you touched on, is whether that law should be extended to other agencies, particularly the Bureau of Reclamation. That particular point, of course, is of major interest not only to this subcommittee, but to the full Public Works Committee, because the Public Works Committee is the only committee of the House of Representatives charged under the Rules of the House with responsibility for Federal water power activities.

Mr. BUCHANAN. That is what I am suggesting here, Mr. Chairman. The Flood Control Act of 1938 does give us the authority to review the plans and specifications and so forth, and the design of the dam, leading to the question of whether penstocks should be included or whether they should not be. In fact, we can see no difference between the Army projects where we have that authority and reclamation projects where we do not have that authority. When you consider the fact that we are a consulting agency—we are an advising agency—why should we advise the Corps of Engineers and not the Department of the Interior if that is the function we are to perform? We do not see the difference between the two.

Does that answer your question, Mr. Curran?

Mr. DAVIS. I think the point is very clear that it should be extended because we recognize the fundamental responsibility of the Federal Power Commission, that you do it over-all and not just go at it piecemeal. I can see where some benefits might come because of your advice or some detriment might come because you were not properly consulted so you could not give your advice. You know more about the question than any other agency in the country, and you should, because you are directed to by law as the responsible agency.

Mr. CURRAN. Mr. Buchanan, there is another agency of the Government building dams, the International Boundary and Water Com-

mission, United States and Mexico. It is now constructing a dam on the Rio Grande which will include power installation. I believe it is making further studies on the river. Does the Federal Power Commission work with that agency?

Mr. BUCHANAN. I do not believe so. Mr. Adams, Chief of our Bureau of Power, will answer that question.

Mr. ADAMS. We have no official responsibility for working with that agency, but at their request our Fort Worth office has assisted them in making power market studies and power value studies which they have used in their own engineering organization in carrying out the plans for the international projects on the Rio Grande; but that is the only participation we have had in their work.

Mr. CURRAN. So that I am correct in this then: In the planning of additional dams you would not know until after the fact whether or not there would be provision for power installation there? You would not advise that Commission in the design?

Mr. ADAMS. That is right. We have not been called upon to advise them in any manner as to the nature and extent of the power installation—only on the power markets and power values.

Mr. DAVIS. You think that should be included though Mr. Adams? You agree with your chairman.

Mr. ADAMS. I think that all Federal projects should be in the same category. I see no basis for any distinction.

Mr. DAVIS. Of course, that is a ridiculous question as to whether he approves the chairman's statement. Nevertheless, I am thinking a little bit deeply on it.

Do you want to ask a question, Mr. Angell?

Mr. ANGELL. Mr. Davis, what is the jurisdiction of your Commission over international streams such as the St. Lawrence?

Mr. BUCHANAN. We have the jurisdiction to pass upon projects that may be constructed in the St. Lawrence for power purposes.

Mr. ANGELL. Under existing law may the St. Lawrence project be constructed by the Canadian Government without action of the Congress of the United States?

Mr. BUCHANAN. That question has been bandied back and forth. I will ask Mr. Gatchell, who is in active contact with the parties that are dealing with that matter, to answer your question.

Mr. Gatchell of the Law Bureau.

Mr. GATCHELL. Mr. Angell, the answer to your question is that under the present law if Congress does not approve construction of the project by a special act of Congress, then the International Joint Commission created under the Boundary Water Treaty of 1909 may give the international approval and the Federal Power Commission may give approval under the laws of the United States, namely, the Federal Power Act, for construction by some non-Federal agency. It could not, of course, authorize any Federal agency to construct, as it has no authority to do so, but it may give the approval required for the State of New York or some other applicant to construct insofar as the Federal laws are concerned.

Mr. ANGELL. May I ask another question? What is the jurisdiction of the Federal Power Commission over navigable streams lying wholly within the boundaries of a State?

Mr. BUCHANAN. For the construction of dams for power purposes?

Mr. ANGELL. For the construction of dams for hydroelectric power.

Mr. BUCHANAN. We are the exclusive licensing agency for States and municipalities, corporations, and individuals. We can recommend to Congress the construction in those streams of Federal projects or deny an application for them and recommend that the particular project be constructed by the Federal Government. But so far as the licensing of projects and the construction of dams for power purposes by individuals, corporations, or States and municipalities are concerned, we are the agency that does that.

Mr. ANGELL. Even though the stream lies entirely within the boundaries of a State?

Mr. BUCHANAN. If it is a navigable stream subject to the jurisdiction of Congress. In other words, that might contribute to interstate commerce.

Mr. JONES. Are there any other questions?

Mr. WOOD. What constitutes the definition of a navigable stream? Navigable to what kind of traffic?

Mr. BUCHANAN. Mr. Gatchell, you are the expert on that.

Mr. GATCHELL. The courts have been very liberal in that, Dr. Wood. The *Daniel Ball case* (10 Wall. 557) involved the transportation of goods on a steamer which operated on the Grand River in Michigan wholly within the State of Michigan, between the city of Grand Haven on Lake Michigan, and the city of Grand Rapids, 40 miles upstream. At Grand Haven, the steamer the *Daniel Ball* connected with other steamers that could operate across Lake Michigan. Therefore interstate commerce could be carried upon that stream solely within the State because of the steamers. The courts have held many times that the transportation of logs constituted commerce. The question was whether the logs themselves moved in interstate commerce or the river connected with an interstate stream as to whether Congress had jurisdiction over the particular streams.

In 1932 Congress provided in the River and Harbor Act that in considering navigability the Chief of Engineers should consider the use of the stream for pleasure boats. The act was passed for the specific case of the Intercoastal Waterway, which, as you know, is used very largely by pleasure boats in some sections. That is about as good an answer as I can give right offhand as to the character of navigable use.

Mr. WOOD. So far as as logging is concerned, if the logs were taken from the timber lands and floated down the stream to the sawmill, the whole operation from beginning to end within the State, would it then be classed as a navigable stream?

Mr. GATCHELL. It might be classed as a navigable stream within the meaning of the laws of the State. If it was possible to connect the stream for interstate commerce it would then be subject to the jurisdiction of Congress. The mode of transportation has determined navigability, and the connection with interstate commerce has determined the extent of Federal jurisdiction, if I catch your point.

Mr. BUCHANAN. Shall I proceed, Mr. Chairman?

Mr. JONES. Yes.

Mr. BUCHANAN. The Commission's participation in the planning of Federal water-control projects may be illustrated by reference to its work in cooperation with the Corps of Engineers. The Commission's field staff makes cooperative investigations with the field representatives of the Corps of Engineers and consults with and advises

the field staff of that agency with respect to the power features of reservoir projects in the early planning stages. These cooperative studies involve a determination of the relationship of the proposed multiple-purpose reservoir to a comprehensive plan of development for the entire basin, and an estimate of the amount and feasibility of the power that could be produced in connection with the project. In the conduct of these investigations full consideration is of course given to possible markets for the power as indicated by power-market studies made by the Commission's staff. Estimates are also made of the value of the power to prospective purchasers. After review in the Washington office, these studies provide a basis for the Commission's comment and recommendations to the Secretary of the Army on project plans as developed at a higher level of authority in the Department of the Army.

Cooperative procedures somewhat similar to those just described have been established with other Federal agencies, including the Bureau of Reclamation of the Department of the Interior.

It is the opinion of the Commission that each function of a multiple-purpose reservoir project should be economically sound. In order to avoid conflicting interpretations of statutory provisions, the Congress should clearly state its intentions as to the purposes for which each project is authorized. If it should be the intent of Congress to subsidize any function, as for instance irrigation, the legislation should leave no doubt regarding such intent, and should prescribe the extent and duration of the subsidy.

STANDARDS OF ECONOMIC JUSTIFICATION

Although the Commission directs its attention principally to the water-power aspects of Federal multiple-purpose reservoir projects and river-basin programs, it has considerable familiarity with the procedures now in use by the several Federal agencies for making economic analyses of such proposals, and it is the Commission's considered judgment, after much study and experience, that there is need for the adoption of a uniform method of project evaluation which would result in a standard form investment appraisal statement for each project.

The investment appraisal statement should include a complete but concise estimate of project cost—both capital cost and average annual cost—together with an estimate of the value of the average annual benefits expected to be derived from the project. Anticipated intangible benefits should be weighed but cannot be measured precisely in terms of dollars.

It is recognized that practically every reservoir project will result in certain adverse effects of a temporary character on the local economy, but incidental beneficial effects attributable to the project and of which no account is taken will outweigh such adverse effects almost without exception. Inasmuch as it is not customary to evaluate incidental benefits in terms of dollars, no attempt should be made to reckon adverse effects in that manner. In other words, reliance should be placed upon the more direct or primary types of benefits and costs, susceptible of being evaluated.

If the average annual benefits obtainable from a reservoir project exceed the estimated annual costs, the project should be classified as

eligible for immediate authorization; otherwise it should be held over for possible future consideration.

REQUIREMENTS OF LOCAL PARTICIPATION AND REIMBURSEMENT TO THE FEDERAL GOVERNMENT

It is understood that the subject of "local participation" relates to the question of financial participation by local interests in the cost of Federal reservoir projects or other types of Federal projects on account of certain special benefits inuring to the locality. Inasmuch, however, as no such questions arise in connection with the power aspects of Federal projects, but rather in connection with the flood-control and irrigation aspects, perhaps it would not be appropriate that the Commission undertake to comment on this subject.

If, however, the subject relates in any way to payments for downstream power benefits attributable to headwater storage, the Commission invites attention to existing law on that subject, viz, the provisions of section 10 (f) of the Federal Power Act, which require the owner of a water power plant benefited by a headwater storage improvement to bear an equitable share of the annual costs for interest, maintenance, and depreciation of such headwater improvement, as determined by the Commission.

SALE OF POWER FROM FEDERAL RESERVOIR PROJECTS—ALLOCATION OF THE COSTS OF SUCH PROJECTS

Revenue derived from electric power produced at Federal dam projects must be sufficient at least to assure recovery by the United States of the portion of the project costs assigned to power development together with the costs of related transmission facilities and the costs incidental to the sale of power. In the case of each such project the cost of facilities having joint value for power production and other purposes constitutes a very substantial part of the total capital investment in the project; and the portion of the joint costs allocated to power development, when added to the specific power costs, in general makes up the investment in generating facilities which the power revenues should amortize. Thus it is seen that cost allocations and schedules of rates and charges are closely related matters; hence the desirability of considering these subjects together rather than separately.

In this connection attention is invited to the Bonneville Act (50 Stat. 731), and the Fort Peck Act (52 Stat. 403), in each of which the Congress required that—

> Rate schedules shall be drawn having regard to the recovery * * * of the cost of producing and transmitting such electric energy, including the amortization of the capital investment over a rasonable period of years.

It will be observed further that as to certain projects, including both Bonneville and Fort Peck, the Congress has made provision for allocating to power development an appropriate share of the costs of joint-use facilities, principally dam and reservoir costs.

Inasmuch as the rate schedules must be based upon an allocation of costs to power development it is necessary, in order to know the magnitude of the investment which must be supported by power revenues, that the cost allocation be made before the rate schedules are prepared.

As yet there has been very little legislation on the subject of Federal project cost allocation. The Federal Power Commission has been given such authority with respect to the Bonneville and McNary projects on the Columbia River, the Fort Peck project on the Missouri River, and four projects on the Snake River, a tributary of the Columbia; and the Department of the Interior exercises similar authority with respect to certain reservoir projects built by the Bureau of Reclamation. Cost allocations proposed by the Tennessee Valley Authority become final when approved by the President. With these exceptions, however, it is a notable fact that as to the numerous Federal reservoir projects heretofore constructed or now being constructed by the Corps of Engineers in various sections of the country no agency of the United States has any specific statutory responsibility for the final allocation of costs.

On the Missouri River below the Fort Peck Dam the Corps of Engineers is now constructing the very large Garrison, Oahe, and Fort Randall projects, and while the Congress has provided for cost allocations at Fort Peck on the same river, no such action has been taken with respect to the three projects just mentioned; nor has the Congress directed any Federal agency to allocate the costs of the large Chief Joseph and The Dalles projects on the Columbia River, both of which are now being constructed by the Corps of Engineers. Likewise, the Congress has authorized the construction of the Priest Rapids project on the Columbia River, but has made no provision for having the costs thereof allocated.

Section 5 of the Flood Control Act of December 22, 1944, provides that schedules of rates and charges prepared by the Department of the Interior for sale of power produced at dams constructed by the Department of the Army shall become effective upon confirmation and approval by the Federal Power Commission, but since no agency of the United States has specific statutory responsibility to allocate the costs of a great majority of such projects it is only by the assumption of authority that any such agency or group of agencies presume to make cost allocations.

As the TVA Committee on Financial Policy observed:

> Every method of allocating the common-plant investment necessarily involves assumptions and estimates the formulation of which is dependent on widely varying opinions of individuals * * * The problem is one of judgment rather than scientific calculation * * * The committee's conclusions are * * * based on judgment and not on any one allocation theory (H. Doc. No. 709, 75th Cong., 3d sess., p. 5).

Lacking authority, the several Federal agencies concerned in any way with authorized Federal reservoir projects undertake jointly to allocate the costs. They are unable to agree, and there the matter stands. Yet it is the responsibility of the Federal Power Commission to consider and act upon proposed rate schedules based upon that portion of the total project investment which power must bear. This, of course, requires an allocation of costs as a necessary basis for rate making designed to insure recovery of the power investment.

The Federal Power Commission again recommends that the Congress at this time reexamine certain of the procedures relating to the disposition of surplus electric energy produced at Federal reservoir projects. This recommendation relates particularly to the function which the Federal Power Commission now has in respect to confirming

and approving the rates for the disposition of power at some of the Federal projects.

There is no uniformity with respect to the area of the Federal Power Commission's authority to confirm and approve such rates. Thus, the energy generated at Hoover Dam is sold under conditions detailed in a statute (the Boulder Canyon Project Act of 1928), no confirmation and approval of rate schedules being required. Similarly, the Tennessee Valley Authority is not required to obtain approval of the rate schedules under which electric energy from its various projects is sold (the Tennessee Valley Authority Act of 1933). In the sale of power generated by projects constructed by the Bureau of Reclamation under reclamation laws, confirmation of rates is not required.

Approval of the Federal Power Commission, however, is required for the sale of energy from the Bonneville project (the Bonneville Act of 1937), the Fort Peck project (the Fort Peck Act of 1938), and many other projects under the control of the Department of the Army where the energy not required in operation of the projects is delivered to the Secretary of the Interior for disposition (the Flood Control Act of 1944).

To illustrate the lack of uniformity in the present arrangement, reference might be made to the Columbia River projects and other projects in the Northwest whose energy is disposed of by the Bonneville Administrator. As heretofore noted, energy from the Bonneville project can be disposed of only at rates which are confirmed and approved by the Federal Power Commission. Energy generated at the Bureau of Reclamation's Grand Coulee project, however, which energy is commingled with the energy from the Bonneville project, is not subject to the same action by the Federal Power Commission. The same applies to the Hungry Horse project now being constructed by the Bureau of Reclamation.

On the other hand, the McNary and Chief Joseph projects, also on the Columbia River, and certain projects on the Snake River, a tributary of the Columbia, are to be subject to the same authority with respect to rates as prevails in the case of Bonneville. It appears that the energy of most or all the projects in the Columbia River Basin will be commingled and it will not be feasible to charge separate rates for the energy generated at the several projects. The businesslike procedure would be to combine the projects for the purpose of determining costs and applicable rates. With jurisdiction vested in the Federal Power Commission with respect to the confirmation and approval of rate schedules for some of the combined projects and absent as to others, a disorganized situation is bound to prevail.

The lack of uniformity just described is in process of being repeated in connection with the Missouri River Basin projects. The Department of the Interior is responsible under the Flood Control Act of 1944 for the marketing of power generated at projects constructed by the Department of the Army in the Missouri River Basin. A number of these projects, including Garrison, Oahe, and Fort Randall are now being constructed by the Corps of Engineers. Section 5 of the Flood Control Act of 1944 requiring rate approval by the Commission is, of course, applicable in the case of these projects, and the Commission has held that rates for power generated at Missouri

River Basin projects built by the Army engineers should be filed for approval. A group of such rates became public with an indicated effective date of April 1, 1950, but have never been filed for Commission approval. A contract containing one of these rates was filed for the Commission's information in August 1950, whereupon the Commission requested that the rates and charges contained therein be filed for confirmation and approval by the Commission pursuant to the Flood Control Act of 1944. A reply by the Secretary of the Interior declared that section (9)[1] of the above statute governed the disposition of power generated at Missouri River Basin projects and that no filing was required. By letter dated December 1, 1950, the chairman reaffirmed the Commission's position and requested again that the rate schedules be filed, but to date no reply to that letter has been received.

The statutes which vest in the Federal Power Commission the responsibility of confirming and approving rates for the sale of electric power from certain Federal reservoir projects are not harmonious. Thus, section 7 of the Bonneville Act provides in part that:

> Rate schedules shall be drawn having regard to the recovery (upon the basis of the application of such rate schedules to the capacity of the electric facilities of Bonneville project) of the cost of producing and transmitting such electric energy, including the amortization of the capital investment over a reasonable period of years. Rate schedules shall be based upon an allocation of costs made by the Federal Power Commission. In computing the cost of electric energy developed from water power created as an incident to and a byproduct of the construction of the Bonneville project, the Federal Power Commission may allocate to the costs of electric facilities such a share of the cost of facilities having joint value for the production of electric energy and other purposes as the power development may fairly bear as compared with such other purposes.

The Flood Control Act of 1944, however, does not fix the responsibility for making cost allocations although that act clearly recognizes the necessity therefor, as evidenced by the following excerpt from section 5 thereof:

> Rate schedules shall be drawn having regard to the recovery * * * of the cost of producing and transmitting such electric energy, including the amortization of the capital investment allocated to power over a reasonable period of years.

There continues to be much disagreement concerning the period of years over which the capital investment allocated to power shall be amortized. In the Bonneville case the Federal Power Commission fixed the amortization period at 50 years which was entirely agreeable to the Bonneville Power Administration of the Department of the Interior. A wide difference of opinion now exists, however, with respect to the amortization period to be used in connection with a number of Army engineer projects in Arkansas, Oklahoma, Missouri, and Texas—the Southwestern Power Administration region—as will be apparent from the following discussion.

Considerable confusion exists with respect to cost allocation procedures relating to the projects just referred to, from which the power output is to be sold by the Southwestern Power Administration. The

---

[1] (c) Subject to the basin-wide findings and recommendations regarding the benefits, the allocations of costs and the repayments by water users, made in said House and Senate documents (H. Doc. 475 and S. Doc. 191, as revised and coordinated by S. Doc. 247, all of the 78th Cong., 2d sess.), the reclamation and power developments to be undertaken by the Secretary of the Interior under said plans shall be governed by the Federal Reclamation Laws (Act of June 17, 1902, 32 Stat. 388, and acts amendatory thereof or supplementary thereto).

Commission has had a very recent experience in connection with rates proposed by the latter agency. Because circumstances forebode repetitions of this experience, it is believed that a rather full discussion thereof may be helpful to your committee in arriving at a workable solution of the problem with which you are coping.

The Southwestern Power Administration (SPA) contemplates that by 1958 it will be selling electric energy from 12 Federal reservoir projects constructed by the Army engineers. Recently the Secretary of the Interior, upon the recommendation of SPA, entered into a 30-year contract with Arkansas Power & Light Co. for the sale of energy to that company, and in the same contract the Arkansas Power & Light Co. agreed to sell power and energy to Reynolds Metals Co. Arkansas Power & Light's rate to Reynolds Metals was geared to the price it was required to pay to SPA under the three-party contract. In determining the rate, SPA took into consideration the cost of the 12 projects expected to be in existence in 1958, together with the cost of a rather comprehensive transmission system.

The question as to whether the proposed rates met the requirements of section 5 of the Flood Control Act of 1944 depended upon the cost allocated to power and the amortization period used. The estimated total cost of the 12 projects is somewhat in excess of $700,000,000, of which the Corps of Engineers, with the concurrence of the FPC Bureau of Power, proposed to allocate $418,355,000 to power development. This contrasts with the Southwestern Power Administration's proposed allocation of $217,996,000 to power. The Corps of Engineers' proposal contemplated the allocation of a share of the cost of joint-use facilities to power development, while SPA employed the incremental cost basis under which the specific costs of power facilities together with the costs of enlarging dams and reservoirs to permit of the inclusion of power installations were charged to power development.

SPA insisted that it could not dispose of the energy at rates which would recover the $418 million which the Corps of Engineers desired to allocate to power. Its representatives took the position that the selling agency would be priced out of the market if it were required to adhere to that allocation. They argued that in order to achieve widespread use of electricity at the lowest possible rates consistent with sound business principles as required by statute, only incremental costs should be assigned to power.

The length of the amortization period was also a subject with respect to which opinions differed widely. As previously indicated, the Federal Power Commission adopted an amortization period of 50 years in the Bonneville case, whereas in the case of the projects here under discussion, the Department of the Interior took the position that the amortization period should be equal to the service lives of the electric facilities with a maximum of 100 years assigned to any particular facility.

It was obvious that the rates proposed by the SPA would fall far short of recovering $418 million in a period of 50 years. But, using the incremental cost basis and amortizing the costs of electric facilities over periods ranging up to 100 years, as proposed by the Department of the Interior, the proposed rates appeared adequate for the recovery of $218 million during the 100-year period.

99217—52—pt. 3——2

When the Bonneville Act was under consideration by the Congress 15 years ago, the Federal Power Commission made it clear that it did not seek any authority over the rates and charges for electricity generated at Federal reservoir projects. In a letter dated May 12, 1937, to Senator Royal S. Copeland, the Commission, speaking through Vice Chairman Clyde S. Seavey, took the following position with respect to confirmation and approval of Bonneville rates by FPC as then proposed in pending legislation:

> In the opinion of the Commission, the divided responsibility as to rates is uneconomical and undesirable in many respects. A single agency should be vested with complete authority and responsibility as to the rates to be charged for electric energy generated at the project, and sold to the public.
>
> In the first place, the divided responsibility would necessitate duplicate staffs of the Administrator and the Federal Power Commission. This would result in unnecessary expense to the Federal Government, which would be greatly increased should the same plan of rate-making here proposed be extended to other Federal projects.
>
> Secondly, the rate procedure prescribed by the bill would result in unnecesary and unjustifiable delay. It would be necessary for the Administrator to prepare rate schedules and submit them to the Commission before consideration could be given by the Commission to the effect of the proposed rates of the Administrator.
>
> Further, the bill gives the Federal Power Commission no authority to modify rate schedules submitted by the Administrator but only a veto power over the rate schedules submitted. This places the Commission in an impossible position as a regulatory agency over the rates.
>
> The provision as to the basis of allocation of the cost of facilities properly chargeable to the production and transmission of the electric energy is not clearly defined in either bill. This is bound to result in extended controversy which could be readily avoided by a clarification of the language used.
>
> The Federal Power Commission does not desire to be understood as urging that jurisdiction over rates, to be charged for electric energy generated at the Bonneville project, be vested in it, but does recommend that it either be relieved from any responsibility in connection with rates charged, or that its control over rates be made adequate, effective, and complete if, in the opinion of Congress, it should be charged with this responsibility.

It will be noted that the Commission stated that in event the Congress should desire to vest rate authority in it, the Commission should be given comprehensive authority not only to approve rates but likewise to initiate changes therein. The Congress did not adopt this suggestion of the Commission but instead confined the Commission's responsibility merely to confirmation and approval of the rates without any authority to initiate changes—merely a veto power, in other words.

The experience of the Commission to date has well demonstrated the wisdom of its recommendations to the Congress when the Bonneville Act was under consideration. The Commission is firmly of the opinion that the present condition in respect to its approval in some cases and lack of authority to approve rates of Federal projects in others is unsatisfactory and should not be continued.

Under the Federal Power Act the Commission's principal duties in respect to rates are to see that excessive rates are not charged by privately owned public utilities, as defined in the Federal Power Act, and natural-gas companies, as defined in the Natural Gas Act. Generally speaking, the regulation of rates by public utility regulatory commissions is aimed at fixing maximum rates in order to protect consumers from unreasonable charges. This is altogether a different kind of regulation from that which appears to have been contemplated by the Congress with respect to the rates of Federal projects over which the Commission has partial jurisdiction. Here the main emphasis would seem to be on fixing minimum rates.

There is no question of the ability to sell electricity where the Commission fixes a rate lower than that applied for by an electric utility; there may be serious question regarding the ability of a Federal agency to sell electricity at a minimum rate fixed by the Commission if the rate so fixed is higher than that sought by the Federal agency. A case in point may be cited.

The Narrows project was constructed by the Corps of Engineers and the electric energy is turned over to the Secretary of the Interior (SPA) for disposition under rates subject to confirmation and approval by the Federal Power Commission. The rates filed with the Commission were not adequate in the Commission's opinion to return the cost properly allocable to power over a reasonable period of years. It was contended by representatives of SPA that there was only one customer for the power, namely, the Southwestern Gas & Electric Co., and the rate proposed was the highest the company would pay. Under the circumstances the Commission had no recourse but to approve the rates. Approval, however, was limited to a period of 2 years, with the hope that experience under the contract would enable the Government to negotiate a more favorable rate or possibly find another market for the power.

It is possible that only the Congress can effectively require the selling agency to carry out the intent of the Congress. In any event, from the practical viewpoint, the Commission has found its limited authority in this particular field of public service to be ineffective and unsatisfactory.

BASIN ACCOUNT

It is unquestionably in the public interest to coordinate the power facilities, both hydroelectric and fuel-electric, in a river basin or region and operate the interconnected power plants as an integrated system; and it is inconceivable that any other course would be followed. In any basin or region having several generating plants, the cost of power as among the several plants will vary considerably because some water-power sites are much more attractive than others. There can be no valid objection, however, to treating the several water-power developments in a river basin as a unit for the purpose of accounting for energy generation, system peak demands, transmission losses, energy sales, gross revenues, and all annual costs including operation and maintenance expenses.

The Congress should provide, however, for recovery by the United States of all costs properly chargeable to power, including interest charges. The Commission believes that such costs should be amortized over the service lives of the power facilities, the maximum amortization period for any facility, regardless of its service-life expectancy, not to exceed 50 years. For example, the cost of a concrete dam, which might last much longer than 50 years, would nevertheless be amortized in 50 years. For amortization purposes and for all other purposes involving interest calculations in connection with Federal power investments, the Commission favors the use of an interest rate approximating the average weighted cost of money to the United States obtained by the issuance of long-term bonds.

The Commission does not advocate the use of power revenues, or the portion thereof required to cover interest charges, to subsidize purposes other than power, but feels rather that if it is the desire and

intent of the Congress to subsidize any function such intent should be made perfectly clear in the enabling legislation, and the subsidy should be both direct and readily identifiable. True statesmanship might on occasion dictate the wisdom of granting subsidies.

ORGANIZATIONAL IMPROVEMENTS

So long as several different departments and agencies of the United States may continue to be engaged in major Federal construction activities, the Commission believes that the roles of existing agencies in water-resource development should, in general, be maintained. While need for improvement in interagency relationships undoubtedly exists, the Commission is advised that during the past decade progress has been made in effecting such improvement.

Important in this direction has been the voluntary association of six Federal agencies in the Federal Interagency River Basin Committee, consisting of representatives of the Departments of the Army, Interior, Agriculture, Commerce, the Federal Security Agency, and the Federal Power Commission. This organization has established field agencies in the basins of the Columbia and Missouri Rivers, in the Pacific Southwest, in the region of the Arkansas, White, and Red Rivers, and in the New England-New York area. Regional surveys of water and land resources are now being made in the Arkansas-White-Red area and in the New England-New York area.

The interested States are being given full opportunity to participate actively in these investigations and their advice and recommendations will receive careful consideration in reaching decisions and formulating recommendations to the Congress.

RECOMMENDATIONS

The Federal Power Commission, after having given much consideration to the problems hereinbefore discussed, submits the following recommendations for the consideration of your committee and the Congress:

(1) That the Congress be more definite in laying down the standards, particularly with respect to cost-allocation procedures and periods for amortization of investments, under which the power generated at Federal reservoir projects shall be sold;

(2) That the Federal Power Commission either be relieved completely of all responsibility with respect to rates at which hydroelectric power produced at Federal multiple-purpose dams shall be sold, or that as an alternative, the Commission be clothed with complete rate-making authority, including authority to initiate rate changes and require modification in rate schedules, such authority to extend to all Federal reservoir projects constructed by the Department of the Army and the Department of the Interior;

(3) That the agency of the United States, if any, to which the Congress may hereafter give effective rate-making authority with respect to the sale of power produced at Federal reservoir projects also be given complete authority to allocate the costs of such projects;

(4) That in the event the Federal Power Commission should be relieved of all responsibility with respect to such rates and cost allocations the Congress keep informed as to the administration of the

selling agency by directing the Commission to investigate at specified intervals the work of the agency and report thereon directly to the Congress;

(5) That in order to remove some of the uncertainties which now exist as to the policies of the Congress regarding rates to be charged for electric power produced at Federal reservoir projects, the language of the following paragraph be approved and made applicable to all such projects constructed by the Department of the Army and the Department of the Interior:

> The rates charged in the sale of electric power and energy generated at facilities owned or operated by the United States shall return to the United States Treasury a total sum sufficient to cover, during the periods of their respective service lives, the original cost of power facilities having lives of less than 50 years; the amortization of the remainder of capital investment in power facilities over a period of 50 years subsequent to the "in-service" date of such facilities; an annual return on the unrecovered balance of such original cost and remainder of capital investment equal to the composite rate of the outstanding long-term indebtedness of the United States at the time of the investment, except that adjustment shall be made from time to time if substantial changes take place in such composite rate; the operation and maintenance costs; and payments in lieu of State and local taxes.

In conclusion the Commission desires to point out that if it is given comprehensive jurisdiction over the rates for the sale of electricity generated at Federal reservoir projects, an appropriation of funds for this work will be required.

The making of investigations for the Congress as described in recommendation (4) above, would likewise cost money. Even if the Commission's functions are confined to its present statutory authority, the increase in the workload will require an expanded staff.

Mr. Chairman, there are several parts of this statement I would like to point out with particular emphasis for your consideration, the one appearing on page 9 entitled "Standards of Economic Justification" and the other appearing on page 11 entitled "Sale of Power From Federal Reservoir Projects and Allocation of the Costs of Such Projects." We feel rather strongly on both points and we would ask the committee to give particular consideration to those items or those two subjects.

Mr. JONES. Let me call your attention to page 19 of your statement, Mr. Buchanan, in the discussion of those costs of projects and then that discussion will invoke the questions that you have pointed out in the Standards of Economic Justification.

The allocation of costs compiled by the Corps of Engineers was $418,000,000 compared with $217,000,000 by the Southwestern Power Administration. What accounts for that wide margin of difference in the figures on the estimates of the power cost?

Mr. BUCHANAN. It was the method used in allocating the costs, in determining the value of the component parts of the entire project. The Corps of Engineers and the Bureau of Power of the Commission used a method known as the green book method. What is the technical term on that?

Mr. ADAMS. It is known as the separable costs remaining benefits methods, as developed by the Federal Interagency River Basin Committee.

Mr. JONES. That does not mean a thing to us. You might as well be talking about the moon being made of green cheese. What goes

into the figures to make the wide difference? That is what we want to get at.

Mr. BUCHANAN. Well, this would be a succinct answer to your question. It would mean the power part of the project that was directly concerned with the generation of power—the direct costs of that—plus a portion of the joint costs involved in the dam or required in the construction of the dam. That was the Army approach.

The Southwestern Power Administration's approach was to take the incremental costs. That is only the direct costs that could be allocated to power alone. The difference represented about $200,000,000.

Mr. JONES. Do you have any figures that reflect factors that went into those items so that we could know what you are talking about? Have you any figures submitted to you by the Southwestern Power Administration as to that? What we want is the difference between those costs and not the increments and all those things.

Mr. BUCHANAN. Generally speaking, I think I have pointed out the difference. They have taken the portions of the dam which are joint costs. The dam also goes to flood control, or navigation, or whatever the other objects may be in promoting the project in the first place. That is part of the $200,000,000 that the Corps of Engineers figured. The Southwestern Power Administration just took the actual costs that went into the dam. That would be the pen stocks——

Mr. MCWHORTER. And the powerhouse, and electric facilities of various kinds, and all the specific power costs which would of course be charged to power; and then some share of the costs of joint use facilities like the dam and the reservoir used for power and for navigation and for flood control. So ordinarily unless there was some reason why it should not be done, those joint costs would be apportioned among the several functions to be served by the project.

Mr. JONES. We have rationalized to the point now that we know the factors that go into it are separately charged. Can you give us the figures which were submitted to the Federal Power Commission whereby the difference in those figures would give us some understanding of what charge has been imposed by the Southwestern Power Administration and what charge has been imposed by the Corps of Engineers? We would like a breakdown on those figures.

Mr. BUCHANAN. I have here a tabulation attached to a memorandum from our Bureau of Power dated March 31, 1952, which shows specifically for each project in the Southwestern Power Administration area, a total of 12 projects, the construction cost and the part thereof allocated to power both by the method used by the Southwestern Power Administration and that used by the Corps of Engineers. If you wish, I could put that in the record at this time.

Mr. JONES. I would appreciate it if you would, Mr. Chairman, together with the related documents.

(The documents referred to are as follows:)

REPORT OF WORK GROUP ON ALLOCATION OF COSTS FOR 12 MULTIPLE-PURPOSE PROJECTS IN THE SOUTHWEST

At the meeting of March 10, 1952, attended by representatives of the Southwestern Power Administration, the Department of the Interior, and the Corps of Engineers, and the Federal Power Commission, a work group on cost allocations was established. This group was charged with reviewing, comparing, and

pointing up differences in the cost allocations for 12 multiple-purpose projects in the Southwest as made by SPA and by the Corps of Engineers. SPA's allocations for these projects have been used in a Cost Analysis of the Southwestern Power Administration's Proposed Operations, 1952–58, which accompanied a power contract (Docket E–6407) filed with the Commission for rate approval. A list of those attending the meetings of the work group is attached.

Status of projects and project plans.—The Denison, Norfolk, and Narrows projects are in operation and construction of the projects with the initial installations is essentially completed. The Bull Shoals, Fort Gibson, Tenkiller Ferry, Whitney, and Blakely Mountain projects are in advanced stages of construction. Construction of Table Rock has not been initiated; however, the preparation of construction plans has reached an advanced stage and afford a reliable basis for estimating costs. Some adjustments in the costs now being used for the above projects may be necessary when construction is completed or is further advanced; however, no material changes are anticipated by the Corps of Engineers.

The Keystone, Short Mountain, and Dardanelle projects are units in the authorized comprehensive plan for the development of the Arkansas River and tributaries. Planning on these developments is still in preliminary stages and revisions in preliminary designs, cost estimates, and of other aspects of the project may be expected as more detailed planning proceeds. It may be noted also that these three projects are integrally related to other projects in the plan of improvement insofar as benefits to be expected and allocations are concerned. Insofar as possible in the time available such matters were taken into consideration by the Corps of Engineers and the data given for these three projects are the best obtainable at the present time.

Comparison of results of allocations.—Following is a summary of the overall results of the allocations made by SPA and by the Corps of Engineers for the 12 projects:

	SPA	Corps
With initial installations:		
Project construction costs	$705, 649, 000	$706, 343, 900
Construction costs allocated to power	202, 576, 384	375, 125, 227
Investment allocated to power		399, 476, 880
Annual power charges	7, 657, 276	16, 948, 425
With 6 added units contemplated by SPA:		
Construction costs allocated to power	217, 996, 384	393, 540, 227
Investment allocated to power		418, 354, 880
Annual power charges	8, 262, 086	17, 823, 105

Attached are individual tables for each project and a summary table showing details of these allocations and indicating the reasons for the differing results.

Methods of allocation.—For 10 of the projects the Corps of Engineers allocated costs on the basis of the separable cost-remaining benefits method. This is the so-called Green Book method developed by the Subcommittee on Benefits and Costs of the Federal Inter-Agency River Basin Committee. The corps' allocations for Denison and Norfork were made on the incremental-flood control as basic method; i. e., charging to power the cost of the multiple-purpose project less the cost of a flood-control-only project. The adoption of this method for Denison and Norfork is in conformity with the conclusions reached at the conference of January 21–25, 1952, at which representatives of SPA, the corps, and FPC were in attendance.

SPA utilized the best available data at the time their studies were made. These data were based on estimates prepared by the Corps of Engineers. Subsequent revisions which have occurred, but not supplied to SPA in time for use in these computations, will necessitate adjustments in the amounts as shown by SPA.

In the allocations of cost submitted by SPA the construction cost was allocated by the incremental-flood control as basic method on all projects where sufficient data were available (namely, Denison, Norfork, Fort Gibson, Whitney, and Bull Shoals) except for the Narrows project where only the cost of the identifiable power facilities was allocated to power. SPA did not have available the neces-

sary data to prepare allocations by the incremental method on the following projects:

Project	*Method used*
1. Tenkiller Ferry	Benefits
2. Blakely Mountain	Storage
3. Table Rock	Storage
4. Keystone	Storage
5. Short Mountain	Benefits
6. Dardanelle	Benefits

In view of the present availability of the Corps of Engineers' cost estimates on the above six projects, preliminary studies can now be made by SPA on the incremental cost-flood control basic method, subject to verification of costs and estimates at a later date.

Annual power charges.—In the computation of annual power charges, the Corps of Engineers included interest during construction on the amount allocated to power as an item of cost. SPA did not include interest during construction as an item of cost. The corps used a 50-year amortization period while SPA used a 100-year period. Both agencies used 2½ percent interest.

Operation and maintenance costs used by SPA are based on the actual costs experienced at Norfolk and Denison which have been in operation for several years, adjusted upward or downward for each of the other projects to reflect the effect of different plant capacities. The corps' operation and maintenance costs are based on detailed studies of the manpower and materials needs for each project, and are generally larger than those used by SPA.

SPA's allowances for interim replacements are taken as $1 per kilowatt of installed capacity. The corps' allowances for this item are based on detailed studies of cost of major items expected to be replaced during the 50-year amortization period. The corps' allowances for replacement are generally less than SPA's, which is not unreasonable in view of the shorter amortization period (50 years) used by the corps.

CONCLUSIONS

The review of the allocations made by the two agencies indicates that in general the differences in costs allocated to power result primarily from the different allocation methods used. A further major difference in the annual power charges results from the use of a 100-year amortization period by SPA and a 50-year period by the corps.

With respect to the Denison allocation, which was made by both agencies on the incremental flood control as basic method, SPA has allocated about $6,000,000 less to power than did the corps. As shown in the attached table for Denison, this resulted from the deduction from project costs prior to allocation of the following: The estimated cost of project lands used for recreation and similar purposes; the added cost of the project resulting from renegotiation of a construction contract; and an item for protective security. The latter two items are considered by SPA to be chargeable to national defense.

Attendance at meetings of work group on allocation of costs, FPC offices, March 10, 11, and 12, 1952

Name	*Agency*
George G. Adkins	Federal Power Commission
Roy H. Crosby	Do.
Mack Porter	Southwestern Power Administration
W. C. Davis	Do.
Carson H. Medearis	Do.
C. W. Kinney	Corps of Engineers, O. C. E.
Norman R. Moore	Corps of Engineers, L. M. V. D.
E. W. Reely	Corps of Engineers, S. W. Div.
Howard B. Gray	Corps of Engineers, L. M. V. D.
Fred Bayley	Corps of Engineers, Vicksburg District
A. B. Bastos	Corps of Engineers, Tulsa District
Louis E. Bona	Corps of Engineers, Little Rock District
Orin Lloyd	Do.

In addition to the above, Frank L. Weaver of Federal Power Commission and R. C. Price of the Department of the Interior were present at the opening of the March 10 session.

Comparison of results of cost allocation studies made by SPA and by Corps of Engineers

BLAKELY MOUNTAIN

Item	SPA data	Corps data	Comments
Construction cost (2 units)	$31,000,000	$32,675,000	Construction costs: SPA used corps cost prepared in August 1949. Corps used later cost.
Specific recreation costs	310,000	310,000	
Construction cost less specific recreation costs.	30,690,000	32,365,000	
Construction cost allocated to power.	14,547,000	24,521,000	Allocations: SPA allocation based on proportion of power draw-down storage to total storage times $30,690,000. Corps allocation based on separable costs-remaining benefits method. Storages, acre-feet: Flood control 617,000; power draw-down, 1,286,000; dead, 865,000.
Interest during construction		1,663,000	Investment: SPA did not include interest during construction.
Investment allocated to power.		26,184,000	
Annual power charges:			
Interest and amortization	397,133	923,200	Amortization: SPA used 100 years; corps used 50 years.
Operation and maintenance	100,000	153,600	Replacements: SPA used $1,200 per kilowatt; corps figure included in O. & M. cost and based on estimated limited-life assets to be replaced.
Replacements	75,000		
Total	572,133	1,076,800	

NOTE.—The corps studies show that allocations under the incremental cost-flood control as basic method would give the following results: Construction cost allocated to power, $21,265,000; interest during construction allocated to power, $1,779,000; investment allocated to power, $23,044,000; annual charges allocated to power, $938,800.

FORT GIBSON PROJECT

Item	SPA data	Corps data	Comments
Construction cost (4 units)	$45,900,000	$43,882,000	Construction costs: Figure used by SPA is corps estimate of July 1950. Corps figure is current estimate.
Specific recreation cost	689,000	689,200	
Construction cost less specific recreation cost.	45,211,000	43,192,800	
Construction cost allocated to power.	14,465,000	21,331,000	SPA allocation based on deducting from the dual-purpose project the cost of a flood control only project estimated at $30,746,000. Corps allocation based on separable cost-remaining benefits method.
Interest during construction		2,048,000	
Investment allocated to power.		23,379,000	
Annual power charges (4 units):			
Interest and amortization	394,895	824,300	Amortization: SPA used 100 years; Corps used 50 years.
Operation and maintenance	100,000	278,000	Corps replacements included in O. and M.
Replacements	49,200		
Total	544,095	1,102,300	
Cost of 2 additional units	3,500,000	4,410,000	
Interest during construction		110,000	
Investment for 2 additional units.		4,520,000	
Annual charges for additional units.	135,150	221,680	

NOTE.—Corps studies show that allocation based on incremental-flood control basis would give the following result: Cost allocated to power, $14,380,800; interest during construction, $2,346,300; investment to power, $16,727,100; annual charges, $810,660.

***Comparison of results of cost allocation studies made by SPA and by Corps of Engineers*—Continued**

NARROWS PROJECT

Item	SPA data	Corps data	Comments
Construction cost, dam, reservoir and power plant.	$13,450,000	$12,945,000	Construction costs: Total construction cost and specific recreation cost used by SPA are Corps of Engineers' estimates furnished June 3, 1949. The present construction cost used by the corps shows decreased recreation and dam and reservoir costs.
Specific recreation costs	400,000	285,000	
Construction cost to be allocated to flood control and power.	13,050,000	12,660,000	Allocations: Corps used separable costs-remaining benefits method; SPA allocated only the direct or exclusive power costs to power.
Construction cost allocated to power.	2,883,584	4,760,000	
Interest during construction		182,000	
Investment allocated to power		4,942,000	Investment: SPA did not include interest during construction.
Annual power charges:			
Interest and amortization	78,706	174,250	Amortization: SPA used 100 years; corps used 50 years.
Operation and maintenance	60,000	134,250	O. and M.: Corps estimate based on study of personnel and material needs. Replacements: SPA used $1 per kilowatt; corps figure based on estimated limited-life assets to be replaced.
Replacements	17,000		
Total	155,706	308,500	

NOTE.—The corps' studies show that allocations under the incremental cost-flood control as basic method (i. e. charging to power the cost of the dual-purpose project less the cost of a flood control only project) would give the following results: Cost allocated to power, $5,370,000; investment allocated to power, $5,546,300; annual power charges, $295,300.

TABLE ROCK PROJECT

Item	SPA data	Corps data	Comments
Construction cost (2 units)	$76,340,000	$76,340,000	Both estimates are Corps of Engineers estimates.
Specific recreation costs	2,000,000	800,000	Estimate of recreation cost by SPA determined by that agency. Estimate by corps is derived separately and added to detailed project estimate covering the primary purposes which excludes recreation.
Construction cost less specific recreation costs.	74,340,000	75,540,000	
Cost allocated to power:			
2 generating units	38,910,000	65,800,000	SPA allocation based on proportion of power draw-down storage to total storage times $74,340,000. Corps allocation based on use of separable costs-remaining benefits method. Downstream benefits used in corps allocation.
3 generating units	40,810,000	68,935,000	
Interest during construction:			
2 generating units		3,944,000	
3 generating units		4,023,000	
Investment allocated to power:			SPA did not include interest during construction.
2 generating units		69,744,000	
3 generating units		72,958,000	
Annual power charges (3 units):			
Interest and amortization	1,114,113	2,573,000	Amortization: SPA used 100 years; corps 50 years.
Operation and maintenance	125,000	283,000	Replacements: Corps estimate included in C. & M. cost and is based on limited life assets to be replaced.
Replacements	126,000		
Total	1,365,113	2,856,000	
Project storages, acre-feet:			
Flood control	760,000	760,000	
Power draw-down	1,812,000	1,932,000	
Dead	890,000	770,000	
Total	3,462,000	3,462,000	

NOTE.—Corps studies show that allocations based on incremental cost, flood control as basic method for 2 units would give the following results: Cost allocated to power, $65,140,000; interest during construction, $4,203,000; investment allocated to power, $69,343,000; annual power charges, $2,687,000.

Comparison of results of cost allocation studies made by SPA and by Corps of Engineers—Continued

KEYSTONE

Item	SPA data	Corps data	Comments
Construction cost (3 units)	$126,750,000	$126,750,000	Construction cost estimate furnished by corps.
Specific recreation costs	(1)	950,000	Recreation cost not available at time of SPA allocation.
Construction costs less specific recreation costs.	126,750,000	125,800,000	
Construction costs allocated to power.	7,500,000	35,174,000	Allocation: SPA allocation based on proportion of power draw-down. Storage to total storage times $126,750,000.
Interest during construction		2,638,000	Corps allocation based on separable costs—remaining benefits method.
Investment allocated to power		37,812,000	SPA did not include interest during construction.
Annual power charges:			
Interest and amortization	204,750	1,333,000	Amortization: SPA used 100 years; corps 50 years.
Operation and maintenance	70,000	267,000	Replacements included in O. and M. in corps cost and is based on limited life assets to be replaced.
Replacements	45,000		
Total	319,750	1,600,000	
Project storage, acre-feet:			
Flood control	1,250,000	1,242,300	
Power draw-down	100,000	221,700	
Dead (sedimentation)	420,000	415,000	
Total	1,770,000	1,879,000	

[1] Not deducted.

NOTE.—(1) The corps studies show that allocations under the incremental cost-dual purpose flood contro and navigation project as basic method (i. e. charging to power the cost of the multiple-purpose project with power, less the cost of the dual purposed flood control and navigation project) would give the following results: Cost allocated to power, $31,340,000; interest during construction allocated to power, $4,122,000 investment allocated to power, $35,462,000; annual power charges, $1,513,000.

Comparison of results of cost allocation studies made by SPA and by Corps of Engineers—Continued

BULL SHOALS

Item	SPA data	Corps data	Comments
Construction costs (4 units)	$77,770,000	$76,300,000	Construction costs: Total construction costs, specific recreation costs, and flood control only project cost used by SPA are corps estimates furnished July 1950. Corps figures are based on latest estimate.
Specific recreation costs	880,000	975,000	
Construction cost to be allocated between flood control and power.	76,890,000	75,325,000	
Flood control only project	40,400,000	----------	Allocations: SPA allocation based on incremental cost-flood control as basic. Corps allocation determined by separable costs-remaining benefits method.
Construction cost allocated to power.	36,490,000	46,906,000	
Interest during construction	----------	3,263,000	
Investment allocated to power.	----------	50,169,000	Investment: SPA did not include interest during construction.
Annual power charges (4 units):			
Interest and amortization	996,177	1,768,500	Amortization: SPA used 100 years; corps used 50 years.
Operation and maintenance.	150,000	256,000	Replacements: SPA used $1 per kilowatt; corps figure based on estimated limited life assets to be replaced.
Replacements	160,000		
Total	1,306,177	2,024,500	
Cost of two additional units in previously built powerhouse.	5,615,000	5,400,000	
Investment	----------	5,537,000	
Annual charges	243,290	250,000	
Power date without Table Rock (4 units):			
Average annual output, kilowatt-hour.	566,000,000	685,000,000	Power data: Higher generation by corps due to later corps estimate. Dependable capacity by corps based on minimum draw-down. Corps figures after Table Rock is 144,000 kilowatts.
Primary generation, kilowatt-hour.	414,000,000	479,000,000	
Dependable capacity, kilowatt.	150,000	100,000	

NOTE.—The corps studies show that allocations under the incremental cost-flood control as basic method (i. e. charging to power the cost of the dual purpose project less the cost of a flood control only project) would give following results: Cost allocated to power, $36,580,000; investment allocated to power, $40,367,000 annual power charges, $1,643,000.

NORFORK PROJECT

Item	SPA data	Corps data	Comments
Construction cost (2 units)	$28,800,000	$28,540,000	Construction costs: Higher construction cost used by SPA was earlier corps estimate.
Specific recreation cost	750,000	450,000	
Construction cost less specific recreation cost.	28,050,000	28,090,000	
Estimated cost of flood control only project.	15,300,000	15,455,000	Flood control only project: Higher corps figure is from later estimate.
Construction cost allocated to power.	12,750,000	12,635,000	Allocation: Both based on deducting cost of flood control only project.
Interest during construction	----------	273,000	
Investment allocated to power	----------	12,908,000	Investment: SPA did not include interest during construction.
Annual power charges:			
Interest and amortization	348,075	456,000	Amortization: SPA used 100 years, corps used 50 years.
Operation and maintenance.	140,000	120,000	O. & M.: SPA used approximately 1 percent of amount allocated to power. Corps used project experience.
Replacements	70,000	17,000	Replacements: SPA used $1 per kilowatt. Corps figure based on estimated limited life assets to be replaced.
Total	558,075	593,000	

NOTE.—Sum of operation and maintenance and replacements for Norfork and Denison as estimated by SPA, $430,000; by corps, $407,000.

Comparison of results of cost allocation studies made by SPA and by Corps of Engineers—Continued

TENKILLER FERRY PROJECT

Item	SPA data	Corps data	Comments
Construction cost (2 units)	$24,250,000	$23,100,000	Total construction costs used, by SPA are corps estimates furnished July 1950. Corps figures based on latest estimates
Specific recreation costs	(1)	525,000	
Construction cost less specific recreation costs.		22,575,000	
Construction cost allocated to power.	10,185,000	13,235,527	Corps allocation based on separable costs—remaining benefits method. SPA allocated total project cost, including recreation, to purposes in accordance with the percentage of benefits to those purposes as shown on table facing p. 460 of hearings June and July 1947 on H. R. 3036, 80th Cong., 1st sess. (Dondero bill). Percentages are as follows: Flood control, 49 percent; power, 42 percent; other (not identified), 9 percent; total, 100 percent.
Interest during construction		903,473	
Investment allocated to power		14,139,000	
Annual power charges:			
Interest and amortization	278,050	498,510	
Operations and maintenance	40,000	208,250	
Replacements	34,000		Corps replacements included with O. & M.
Total	352,050	706,760	

[1] Not deducted.

NOTE.—Corps studies show that allocations based on incremental cost-flood control as basic method would give the following results: Cost allocated to power, $11,215,000; investment allocated to power, $12,330,000; annual power charges, $610,900.

DARDANELLE PROJECT

Item	SPA data	Corps data	Comments
Construction cost (4 units)	$76,700,000	$80,838,000	Corps believes that the estimate of construction cost of $80,838,000 should be increased to include dredging and other items needed to achieve project benefits.
Specific recreation cost		600,000	
Construction cost less specific recreation costs.	76,700,000	80,238,000	
Cost allocated to power	25,000,000	55,000,000	SPA used same method of allocation as used for Short Mountain. Corps allocation based on separable costs-remaining benefits method which gave $46,442,000. This was then increased as judgment figure to include the additional costs of dredging, etc., indicated above.
Interest during construction		3,600,000	
Investment allocated to power.		58,600,000	SPA did not include interest during construction.
Annual power charges:			
Interest and amortization	682,500	2,000,000	Amortization: SPA used 100 years; corps used 50 years.
Operation and maintenance	125,000	300,000	Replacements included in O. and M. in corps cost.
Replacements	125,000		
Total	932,500	2,300,000	

NOTE 1.—The corps studies show allocations under the incremental (navigation as basic) method, i. e., charging to power the cost of a dual purpose (navigation and power) project less the cost of a navigation only project would give the following results: Cost allocated to power, $23,488,000; investment allocated to power, $26,302,000; and annual power charges of $1,226,000.

NOTE 2.—Specific or exclusive power costs are estimated by corps as $26,860,000.

***Comparison of results of cost allocation studies made by SPA and by Corps of Engineers*—Continued**

DENISON PROJECT

Item	SPA data	Corps data	Comments
Construction cost (2 units)	$61, 595, 000	$61, 630, 000	Construction costs: Total construction cost and specific recreation cost used by SPA are July 1, 1950, estimates of corps. The present construction cost used by corps shows a decreased recreation cost and an increased cost of dam and reservoir.
Specific recreation costs	3, 000, 000	1, 680, 000	
Construction cost less specific recreation costs.	58, 595, 000	59, 950, 000	
Estimated cost of project lands used for fish and wildlife purposes.	995, 700	----------	Recreation and fish and wildlife uses: Costs were estimated on basis of average cost of all reservoir lands.
Estimated cost of project lands used for recreation purposes.	1, 393, 800	----------	
Estimated added cost of project resulting from renegotiation of contract to a cost-plus-fixed-fee basis considered by SPA chargeable to national defense.	2, 573, 000	----------	
Protective security	303, 000	----------	
Cost to be allocated between flood control and power.	500, 000	----------	
	53, 329, 500	59, 950, 000	
Estimated cost of flood control, only project.	40, 000, 000	40, 540, 000	Flood control only project: Higher corps figure is from later estimates.
Cost allocated to power	13, 329, 500	19, 410, 000	Allocations: Both based on deducting cost of flood control only project.
Interest during construction	----------	464, 980	Investment: SPA did not include interest during construction.
Investment allocated to power	----------	19, 874, 980	
Annual power charges:			
Interest and amortization	363, 895	700, 752	Amortization: SPA used 100 years; corps used 50 years operation and maintenance: SPA used approximately 1 percent of amount allocated to power; corps used project experience.
Operation and maintenance	150, 000	250, 113	
Replacements	70, 000	20, 000	Replacements: SPA used $1 per kilowatt; corps figure based on estimated limited-life assets to be replaced.
Total	583, 895	970, 865	
Cost of additional third unit	4, 405, 000	5, 470, 000	
Investment for third unit	----------	5, 607, 000	
Total annual charges for third unit.	155, 257	249, 000	

WHITNEY PROJECT

Item	SPA data	Corps data	Comments
Construction cost (2 units)	$41, 794, 000	$42, 043, 900	SPA figure is corps estimate dated July 1950, subsequently revised by corps to reflect current figure as used by corps. SPA allocated on basis of incremental flood-control basic, corps allocated on basis of separable cost-remaining benefits.
Specific recreation cost	478, 000	481, 600	
Construction cost less specific recreation cost.	41, 316, 000	41, 562, 300	
Estimated cost of flood control only project.	34, 800, 000	----------	
Construction cost allocated to power.	6, 516, 000	11, 522, 700	
Interest during construction	----------	696, 200	SPA did not include interest during construction.
Investment allocated to power	----------	12, 218, 900	
Annual power charges:			
Interest and amortization	177, 895	430, 800	Amortization: SPA used 100 years, corps used 50 years.
Operation and maintenance	60, 000	99, 900	Corps replacements included in O. & M.
Replacements	30, 000		
Total	267, 895	530, 700	

NOTE.—Corps studies show that allocation based on incremental—flood-control basic—would give the following: Cost allocated, $7,335,400; investment, $8,562,800; annual charges, $398,800; however, it may be noted that revenues which may be obtained from stream-flow regulation would reduce the cost to be recovered by power revenues.

Comparison of results of cost allocation studies made by SPA and by Corps of Engineers—Continued

SHORT MOUNTAIN PROJECT

Item	SPA data	Corps data	Comments
Construction cost, including recreation.	$101,300,000	$101,300,000	Corps estimate.
Specific recreation cost		820,000	Estimates for specific recreation costs and channel dredging costs not available at time SPA prepared allocation report.
Construction cost less specific recreation costs.		100,480,000	
Cost of channel dredging		5,140,000	
Project cost to be allocated between navigation and power.	101,300,000	105,620,000	
Construction cost allocated to power.	20,000,000	64,830,000	SPA basis of allocation—ratio of power benefits to total benefits in the plan for the entire Arkansas River and tributaries, Arkansas and Oklahoma as set forth in H. Doc. 758, 79th Cong., 2d sess., is applied to project cost of $101,300,000 and rounded to give $20,000,000 power allocation.
Interest during construction		4,676,000	Corps allocation is based on separable costs—remaining benefits method.
Investment allocated to power		69,506,000	
Annual power charges:			
Interest and amortization	546,000	2,451,000	Amortization: SPA used 100 years; corps used 50 years.
Operation and maintenance	125,000	582,000	Corps replacements included with O. and M.
Replacements	100,000		
Total	771,000	3,033,000	

NOTE 1.—The Corps' studies show that allocations under the incremental-navigation as basic method (dual-purpose less navigation only) would give the following results: Cost allocated to power, $35,073,000; interest during construction, $4,266,000; investment allocated to power, $39,339,000; annual power charges, $1,731,000.

NOTE 2.—Direct or specific power costs are $29,347,000 as estimated by the Corps.

STAFF CONSIDERATION OF PROBLEMS RELATING TO ALLOCATION OF COSTS FOR MULTIPLE-PURPOSE PROJECTS

A. SOUTHWEST REGION

First consideration by the staff of the Commission of the cost allocation problem in this region occurred around 1944 in connection with the Norfork and Denison projects. Joint studies in these projects with representatives of the Corps of Engineers resulted in Commission staff conclusions favoring tentative cost allocations based on charging to power the incremental cost of adding power development to the projects over the costs of the projects for flood control only. This method of allocating costs was selected because it had been used in formulating the projects in the Corps of Engineers' reports presenting the projects to Congress as a basis for authorization. These allocations were considered when the present rate schedule A of the marketing agency, Southwestern Power Administration, was given approval by the Commission for a period ending February 13, 1953.

Beginning in 1950 with the filing by the Secretary of the Interior of additional SPA contracts for approval by the Commission of the rates contained therein, further consideration was required of the problem of allocation of costs for projects in the Southwest. In order to show that revenues with certain proposed rate schedules would cover costs as required by section 5 of the Flood Control Act of 1944, the Secretary submitted to the Commission a payout study prepared by SPA, which involved the allocation of costs for 12 multiple-purpose projects constructed or to be constructed by the Corps of Engineers. The preliminary allocations included in that study were based on incomplete cost data and on the use of several allocation methods.

In order to determine the amounts of project costs that should properly be charged to power as a basis for establishing and reviewing power rates, representatives of the Corps of Engineers, the Southwestern Power Administration, and the Commission undertook more than a year ago to consider jointly the

problem of allocation of costs for projects in the region. The 12 projects selected for study included Norfork, Denison, and Narrows, which are in operation: Whitney, Bull Shoals, Fort Gibson, Tenkiller Ferry, and Blakely Mountain, under construction; and Table Rock, Keystone, Dardanelle, and Short Mountain, which are authorized but for which no construction funds have been appropriated. It was agreed that the Corps of Engineers would prepare estimates of project costs on the basis of the latest information and would make allocation studies showing the results for each project using a number of allocation methods. It was planned that after representatives of the other two agencies had been given opportunity to review the corps' studies, conferences would be held to exchange views and comments on these studies. At a conference held in January of this year, studies for the first group of four projects were considered by representatives of the three agencies.

In January 1952 the Secretary of the Interior filed with the Commission for rate approval a long-term contract for the sale of a large block of power in the Southwest. Accompanying the contract was a payout study of SPA's proposed operations, which included proposed allocations of costs for the 12 projects mentioned above. These preliminary allocations were also based on incomplete data and on the use of a number of allocation methods.

At the request of the Commission staff the Corps of Engineers furnished studies for the remaining of the 12 projects not previously discussed in conference and the views of the corps as to the amount properly chargeable to power at each of the 12 projects. The allocations considered proper by the corps were based on using the "incremental cost-flood control as basic" method for Norfork and Denison because of the circumstances relating to project justification for purposes of authorization, as noted above; and on using the "separable costs-remaining benefits" method for the other 10 projects. The later method, which was developed by a subcommittee of the Federal Inter-Agency River Basin Committee,[1] is in effect an improvement and refinement of the "alternative justifiable expenditure" method that has been used in a number of instances. Use of that method for the 10 projects was justified on the basis that they were formulated upon a multiple-purpose basis, with power being included as an integral part of the project justification as presented to the Congress for authorization. In some instances the inclusion of power had been found necessary in order to make the projects economically feasible. The Commission staff agrees generally with these views expressed by the Corps of Engineers.

On the basis of the additional information on these projects as furnished by the Corps of Engineers, the Department of the Interior modified its original position of utilizing various allocation methods and proposed that the cost allocation for all 12 projects be based on the "incremental cost-flood control (or navigation) as basic" method. Interior's position is that all of these projects are basically for flood control (and/or navigation) and that the development of power is only incidental to and a by-product of the provision of these principal purposes. Interior representatives maintain, therefore, that power should be charged with only the additional costs required to develop power at the projects, including the costs of any necessary increases in the height of dam for power purposse and the costs of generating facilities.

In SPA's payout study submitted to the Commission in January 1952, the total investment allocated to power for the 12 projects amounted to $217,996,384. This did not include interest during construction since SPA did not estimate such a cost. Using the incremental method of allocation for all projects the total investment chargeable to power is estimated by the Corps of Engineers to be $328,684,180. With the methods favored by the Corps of Engineers and the Commission staff, the total investment allocated to power as estimated by the Corps is $418,354,880. (See attached table.)

The basic question posed by the foregoing is whether in projects such as these, power should be considered as a by-product charged with only incremental costs; or on the other hand, if power is included as an integral power of a multiple-purpose development, power should be charged not only with its incremental costs but an equitable share of the joint costs. Under the "separable costs-remaining benefits" method, each purpose must carry at least its separable cost but no more than the equivalent of its benefits.

---

[1] Report of Subcommittee on Benefits and Costs, dated May 1950, entitled "Proposed Practices for Economic Analysis of River Basin Projects" (so-called "Green Book"). Although this report has not been formally adopted by FIARBC, comments of the member agencies indicate that they consider the proposed allocation procedure to be an acceptable method.

B. CUMBERLAND RIVER BASIN

The question of cost allocations for projects in the Cumberland River basin was discussed in 1949 in conferences attended by representatives of the Corps of Engineers, the Department of the Interior, and the Commission. As a basis for further consideration of the problem, the Corps of Engineers prepared detailed cost data for the Wolf Creek, Center Hill, and Dale Hollow projects.

It is understood that the Secretary of the Interior, as marketing agent for the power from these projects, has arranged for the disposal of the power by the Tennessee Valley Authority. However, no rates for such disposal of the power have been submitted to the Federal Power Commission for approval. Consequently, the question of allocating the costs of these projects has not received further consideration by the staff.

The following tabulation shows the results of Corps of Engineers' studies made in 1950 showing the project construction costs, project investments, and the investment allocated to power by the corps on the basis of the ratio of alternative single-purpose flood control and power projects. The tabulation also shows the approximate investment allocated to power using the "separable costs-remaining benefits," or "Green Book" method.

Project	Project construction cost	Project investment [1]	Investment allocated to power	
			Corps' estimate	Green Book method
Wolf Creek	$82,200,000	$87,154,000	$62,980,000	$65,400,000
Center Hill	54,200,000	47,908,000	33,101,000	35,060,000
Dale Hollow	24,141,000	24,819,000	16,839,700	18,200,000
Total	151,541,000	159,881,000	112,920,700	118,660,000

[1] Includes interest during construction.

Results of cost allocation studies for 12 Southwest projects

Project	Number of generating units	Project construction cost	Total project investment [1]	Investment allocated to power		
				SPA estimate using various methods of cost allocation [2]	Corps of Engineers' estimates	
					With incremental flood control as basic method	With methods favored by Corps of Engineers and FPC staff [3]
Denison	3	$67,100,000	$69,222,000	$17,734,500	$25,481,980	$25,481,980
Norfork	2	28,540,000	29,343,000	12,750,000	12,908,000	12,908,000
Narrows	2	12,945,000	13,452,000	2,883,584	5,546,300	4,942,000
Bull Shoals	6	81,700,000	87,076,868	42,105,000	45,904,000	55,706,000
Fort Gibson	6	48,292,000	52,549,073	17,965,000	21,247,100	27,869,000
Tenkiller Ferry	2	23,100,000	24,641,100	10,185,000	12,330,000	14,139,000
Whitney	2	42,043,900	44,555,139	6,516,300	8,562,800	12,218,900
Blakely Mountain	2	32,675,000	34,870,000	14,547,000	23,044,000	26,184,000
Table Rock	3	79,475,000	84,082,000	40,810,000	72,557,000	72,958,000
Keystone	3	126,750,000	136,185,000	7,500,000	35,462,000	37,812,000
Dardanelle	4	80,838,000	86,134,000	25,000,000	26,302,000	58,600,000
Short Mountain	4	101,300,000	114,104,500	20,000,000	39,339,000	69,506,000
Total		724,758,900	776,214,680	217,996,384	328,684,180	418,354,880

[1] Includes interest during construction.
[2] SPA did not include interest during construction in its estimates.
[3] "Incremental cost-flood control as basic for Denison and Norfork; separable costs-remaining benefits" for other 10 projects.

MARCH 31, 1952.

Memorandum for the Chief, Bureau of Power.
Subject: Allocation of Costs for Southwest Projects.

The power contract, dated January 29, 1952, between the Federal Government, Arkansas Power & Light Co., and Reynolds Metals Co. (Docket No. E–6407), which has been filed by the Secretary of the Interior for the approval by the Commission of the rates contained therein, was accompanied by a cost analysis of the Southwestern Power Administration's proposed operations for the years 1952–58. Included in this analysis were estimates of power output and estimates of power costs for 12 multiple-purpose projects in the Southwest. The constructing agency for these 12 projects is the Corps of Engineers. As a basis for computing power costs, SPA has submitted estimates of the amounts of project costs, which it believed to be properly chargeable to power.

STATUS OF PROJECTS AND PROJECT PLANS

Of the 12 projects included in SPA's cost analysis, the Denison, Norfork, and Narrows projects are in operation and construction of the projects with the initial installations is essentially completed. The Bull Shoals, Fort Gibson, Tenkiller Ferry, Whitney, and Blakely Mountain projects are in advanced stages of construction. Construction of Table Rock has not been initiated; however, the preparation of construction plans has reached an advanced stage and afford a reliable basis for estimating costs. Some adjustments in the costs now being used for the above projects may be necessary when construction is completed or is further advanced; however, no material changes are anticipated by the Corps of Engineers.

The Keystone, Short Mountain, and Dardanelle projects are units in the authorized multiple-purpose plan for the development of the Arkansas River and tributaries. Planning on these developments is still in preliminary stages and revisions in preliminary designs, cost estimates, and of other aspects of the projects may be expected as more detailed planning proceeds. It may be noted also that these three projects are integrally related to other projects in the plan of improvements as benefits to be expected and allocations are concerned.

ALLOCATIONS MADE BY SPA

The following summary shows for each of the 12 projects the cost allocation method used by SPA in its cost-analysis studies.

Project	*Method used*
Denison	Incremental cost-flood control as basic.
Norfork	Do.
Whitney	Do.
Bull Shoals	Do.
Fort Gibson	Do.
Narrows	Direct or specific power cost to power.
Blakely Mountain	Ratio of power drawdown to total storage.
Table Rock	Do.
Keystone	Do.
Tenkiller Ferry	Ratio of power benefits to total benefits for project.
Dardanelle	Ratio of power benefits to total benefits for basin plan.
Short Mountain	Do.

SPA's position appears to be that with the exception of Narrows, its allocations for all projects for which sufficient data were available were made on the basis of the incremental cost-flood control as basic method. Representatives of SPA have stated that in view of the present availability of additional information from the Corps of Engineers, they can now proceed to make preliminary allocations for 11 of the projects (all except Narrows) on the incremental basis. In the case of Narrows, the SPA representatives propose to allocate only the direct or specific power costs to power. They state that the present revenues, which they maintain are the maximum obtainable for the project power, will not cover a larger allocation.

The above procedure for Narrows would mean that the additional cost of dam and reservoir expended in order to develop power would have to be charged to some other purpose. The studies of the Corps of Engineers show that the benefits from flood control, the only other purpose to which project costs are assigned, would be insufficient to cover such costs.

It is pointed out here that the use of the incremental method of allocation is necessarily based on the assumption that the alternative single-purpose project is justified and might be constructed. However, in the case of two of the projects, Fort Gibson and Short Mountain, the studies of the Corps of Engineers show that the alternative projects are not economically feasible.

It is also noted that in making allocations on the basis of proportional use of storage capacity, account should be taken of the dead storage necessary to provide a minimum power head. However, it appears that SPA does not now propose to make any of the allocations using this method.

ALLOCATIONS MADE BY THE CORPS OF ENGINEERS

For the past year or more the Corps of Engineers, in cooperation with SPA and the Commission staff, has been engaged in the making of cost allocation studies for 12 projects in the Southwest. These projects, which are the same as those used in SPA's analysis, include the three projects in operation, the five projects under construction, and four additional authorized projects selected by SPA.

It was planned for the Corps of Engineers to make detailed studies showing estimates of project costs and allocations under a number of allocation methods. As these studies were completed they were to be made available to SPA and the Commission staff for review, following which they would be discussed in conference attended by representatives of the three agencies. At the first such conference held on January 21–25, 1952, at the Office of the Chief of Engineers, cost allocation studies for the Denison, Norfork, Narrows, and Whitney projects were discussed. In addition, the corps' studies for the Bull Shoals project were distributed at the conference and discussed in a general way. Similar future conferences to discuss the remaining projects were contemplated.

Following the filing of the above-mentioned power contract with the Commission, the staff requested the Corps of Engineers to furnish cost allocation studies for the remaining seven projects as soon as they could be asembled. The staff also requested the views of the Corps of Engineers as to the costs and annual charges which should be allocated to power for all 12 projects. The requested information on the seven projects was furnished the staff at a conference held on February 27, 1952, at the Office of the Chief of Engineers between representatives of the Corps of Engineers and members of the Commission staff. The views of the Corps of Engineers on the amounts of costs and annual charges properly chargeable to power for the 12 projects were furnished in a letter dated March 4, 1952, from the Office of the Chief of Engineers.

For 10 of the projects the Corps of Engineers has allocated costs on the basis of the separable cost-remaining benefits method. This is the so-called green-book method developed by the Subcommittee on Benefits and Costs of the Federal Inter-Agency River Basin Committee. The corps' allocations for Denison and Norfork were made on the incremental cost-flood control as basic method; i. e., charging to power the cost of the multiple-purpose project less the cost of a flood control only project. The adaption of this method for Denison and Norfork is in conformity with the conclusions reached at the conference of January 21–25, 1952, at which representatives of SPA, the corps, and FPC were in attendance.

COMPARISON OF ALLOCATIONS MADE BY SPA WITH THOSE MADE BY THE CORPS OF ENGINEERS

The attached summary table shows a comparison of the cost allocations made by SPA for the 12 projects with those made by the Corps of Engineers. Following is a summary of the over-all results of the allocations made by the two agencies:

	SPA	Corps of Engineers
With initial installations:		
Project construction costs	$705, 649, 000	$706, 343, 000
Construction costs allocated to power	202, 576, 384	375, 125, 227
Investment allocated to power		399, 476, 880
Annual power charges	7, 657, 276	16, 948, 425
With 6 added units contemplated by SPA:		
Construction costs allocated to power	217, 996, 384	393, 540, 227
Investment allocated to power		418, 354, 880
Annual power charges	8, 262, 086	17, 823, 105

NOTE.—Investment equals construction costs plus interest during construction.

The studies of the Corps of Engineers show that if costs for 11 of the projects are allocated by the incremental method and the direct costs only are charged to power at Narrows, as apparently now advocated by SPA, the total construction cost allocated to power would amount to $280,745,784 with initial installations and $299,160,784 with the six additional generating units contemplated by SPA.

It will be seen from the above and from the attached summary tables that the total project costs used by the two agencies are in substantial agreement. The differences in the construction costs allocated to power result primarily from the different allocation methods used. However, SPA did not compute interest during construction while the Corps of Engineers did include such costs in determining the investment allocated to power.

In the case of Denison, however, for which allocations by both agencies were made by the incremental cost-flood control as basic method, SPA has allocated about $6,000,000 less to power than did the Corps of Engineers. This resulted from the fact that SPA deducted from project costs prior to allocation the following: (1) The estimated cost of project lands used for recreation and fish and wildlife purposes; (2) the added cost of the project resulting from renegotiation of a construction contract to a cost-plus-fixed-fee basis; and (3) an item for protective security. The latter two items are considered by SPA to be chargeable to national defense.

Since the lands in question in item (1) above were acquired for the primary purposes of the project and are used incidentally for recreation and similar uses, the effect of SPA's procedure is to allocate a part of joint project costs to these incidental uses. Although present law permits the addition of specific features to projects such as this to enhance recreational values, Congress has in particular instances legislated to prohibit the allocation to recreation of any part of the cost of the dam and reservoir. In this connection, reference is made to Public Law 864 Eighty-first Congress, authorizing the Palisades Dam and Reservoir, Idaho.

With respect to items (2) and (3) above, question might be raised as to the authority under which a part of the project costs could be charged to national defense. In this connection, it is pointed out that although the Commission found that the cost of the Bonneville project had been increased as a result of prosecution of part of the work for the relief of unemployment and as a result of expediting the installation of generating units during the war, it did not charge off any part of these increases to national defense or similar purposes. Also, the TVA has not allocated any of its project costs to national defense even though section 14 of the Tennessee Valley Authority Act would permit such allocations.

The foregoing discussion shows that in the case of the Denison project, the amounts allocated to power are substantially different even though the two agencies used the same allocation method. The reasons for this difference may explain why the SPA representatives, although presumably now favoring the adoption of the incremental method for 11 of the projects, are not willing to accept the Corps of Engineers' allocations for these projects using that method.

In computing annual power charges, there are major differences in the results obtained by SPA and the Corps of Engineers in addition to those resulting from the differing amounts of costs allocated to power. SPA did not include interest during construction as an item of cost while the Corps did include such an item. SPA used a 100-year amortization period as compared to a 50-year period used by the Corps of Engineers. Both agencies used a 2½ percent interest rate.

STAFF VIEWS ON ALLOCATION METHODS

In considering the question of allocating the costs of multiple-purpose projects among the various project purposes, the staff of the Division of River Basins believes that consideration must be given to the circumstances of project fromulation and authorization and to the details of the project, including such items as the rules of operation and the purposes to be served. Although the staff does not believe that a single standard formula can be adopted that would be applicable to all projects, it is of the opinion that were projects are conceived and authorized as multiple-purpose developments the allocation method adopted should reflect that fact in that the joint costs and joint savings would be equitably distributed among several project purposes.

One such procedure for distributing project costs that has been used in the past is the alternative justifiable expenditure method of allocation. That method was used by the Department of the Interior in allocating the costs of Grand Coulee Dam and Reservoir. It has also been used by the Tennessee Valley Authority

in allocating the costs of its multiple-purpose projects. The Commission has reviewed the TVA allocation and, in a report dated March 23, 1949, found it to be reasonable.

The separable costs-remaining benefits (so-called "Green Book") method of allocation developed by the Subcommittee on Benefits and Costs of the FIARBC is similar to the alternative justifiable expenditure method. The principal difference is that the concept of separable costs for each purpose in the former method replaces the concept of direct or specific costs for each purpose in the latter. Separable costs are defined as the difference between the cost of the project with the purpose included and the cost without the purpose. Use of the Green Book method will result in an equitable distribution of costs by preventing the costs allocated to any purpose from exceeding corresponding benefits; by requiring each purpose to carry at least its separable cost; and within these maximum and minimum limits, by providing for proportional sharing of the savings resulting from multiple-purpose development. It is pointed out that in the case of a power-flood control project in which the power benefits could carry only the separable power costs, the allocation under the Green Book method would be the same as under the incremental cost-flood control as basic method.

Although the Green Book method of allocation has not been formally adopted by the Federal Interagency River Basin Committee, the comments of the member agencies indicate the method to be acceptable to all of them.

In view of the foregoing, the staff of the Division of River Basins believes that where projects are formulated and authorized for multiple-purpose use, either the alternative justifiable expenditure method or the separable costs-remaining benefits method should be used; and that in view of the extensive interagency study involved in the development of the latter method, its adoption appears to be warranted.

At the conference on allocations held at the Office of the Chief of Engineers during the week of January 21–25, 1952, the staff favored allocations on a multiple-purpose basis, using either the alternative justifiable expenditure or the Green Book method, for the Narrows, Whitney, and Bull Shoals projects. It was found that there was very little difference in the results obtained under the two methods. The staff, therefore, would now concur with the Corps of Engineers in the selection of the Green Book method for these three projects. In connection with the Narrows project particularly, the staff urged that the problem of allocation be separated from the question of obtaining revenues sufficient to cover the costs allocated to power. In the case of the Denison and Norfolk projects, the staff favored the use of the incremental cost-flood control as basic method because of the circumstances of project formulation and authorization and because preliminary allocations made in 1944 using that method had been considered when present rates were established. The Corps of Engineers and SPA concurred in the use of the incremental method for Denison and Norfolk.

FORMULATION AND AUTHORIZATION OF PROJECTS

Because of the importance of the particular circumstances as to project formulation and authorization in the selection of an appropriate method of cost allocation, a brief history of each of the 12 projects is presented below.

(1) Norfork project

This project was authorized by the 1938 Flood Control Act as a unit in the comprehensive plan for flood control and other purposes in the White River Basin, as set forth in Flood Control Committee Document No. 1, Seventy-fifth Congress, first session. This authorization, as interpreted by the Corps of Engineers, limited the construction at Norfork to a reservoir for flood control only. Construction of the Norfork project with provisions for the future installation of power was initiated in the latter part of 1940. Subsequently, in a report published as House Document 290, Seventy-seventh Congress, first session, the Corps of Engineers recommended that provisions be made at that time for the generation of hydroelectric power at the dam. This modification of the project was authorized by the 1941 Flood Control Act.

The studies presented in House Document 290 and those made by the Commission staff in cooperation with the Corps of Engineers were based on charging to power the incremental costs over the costs estimated for a flood-control-only project. In connection with the allocation studies made in 1943 by the Corps and the Commission staff, a letter from the Office of the Chief of Engineers transmitted the results of allocations for Norfork and Denison made on the benefits

basis and also on an incremental basis. In a letter to the Chief of Engineers, dated June 8, 1944, the following statement was made: "It is the opinion of the Commission staff that, in the case of Denison and Norfork projects, the incremental method is preferable because of the circumstances under which these projects were planned and authorized, i. e., the allocation to power should be the difference between the cost of the multiple-purpose project and cost of a single-purpose flood-control project." These allocations using the incremental method were considered when the present rates were established.

(2) Denison project

The Denison project was authorized by the 1938 Flood Control Act for construction in accordance with the plans described in House Document 541, Seventy-fifth Congress, third session. In that report the Corps of Engineers recommended construction of the project for the combined purposes of flood control and the develpment of power. The economic studies described in the report were based on charging to power the cost of the dual-purpose project less the cost of a flood-control-only reservoir. Also, in the definite project studies of 1939, the Corps of Engineers estimated the costs chargeable to power on the incremental basis.

Public Law 868, Seventy-sixth Congress, third session, which was an act authorizing the improvement of certain rivers and harbors in the interest of the national defense and for other purposes, contains the following: "The project for the Denison Reservoir on Red River in Texas and Oklahoma, authorized by the Flood Control Act approved June 28, 1938, is hereby declared to be for the purpose of improving navigation, regulating the flow of the Red River, controlling floods, and for other beneficial uses."

As noted above, the preliminary allocations of 1944 for Norfork and Denison were made on the basis of the incremental cost-flood control as basic method. These preliminary allocations were considered when the present power rates were established.

(3) Narrows project

Improvement of the Little Missouri Basin, including construction of the Narrows Reservoir and certain local flood protection projects, was authorized by the 1941 Flood Control Act, substantially in accordance with the recommendations of the Chief of Engineers in House Document 837, Seventy-sixth Congress, third session. Completion of the plan was authorized by the 1944 Flood Control Act.

Survey studies by the district and division engineers covering the Little Missouri Basin, described also in House Document 837, indicated that neither a reservoir for flood control alone nor a project for power alone would be economically justified at the Narrows site. The studies showed, however, that the benefits from a dual-purpose flood control and power project at the site would exceed slightly the costs of such a development. Accordingly, the Board of Engineers for River and Harbors recommended construction of the dual-purpose Narrows project. After review by the Commission staff of these proposals, the Commission in a letter to the Secretary of War, dated April 23, 1940, concurred in the plans for the dual-purpose development and recommended enlargement of the project to provide greater gross storage capacity and a larger power installation. The recommendation of the Chief of Engineers for the larger project, generally as proposed by the Commission, provided the basis for the authorization granted in the 1941 Flood Control Act.

Neither the survey report studies by the Corps of Engineers nor the studies by the Commission staff considered the question of cost allocation for the Narrows project. The staffs of both agencies tested the justification of the project by comparing the over-all benefits with the total costs to determine a single economic ratio for the development. The definite project report for the Narrows project likewise did not cover the matter of cost allocation.

(4) Whitney project

The 1941 Flood Control Act approved the plan for the Whitney Reservoir as recommended by the Chief of Engineers in House Document 390, Seventy-sixth Congress first session, and authorized the initiation and partial accomplishment of the project. The 1944 Flood Control Act authorized completion of the project.

The plan proposed in House Document 390 provided for the construction of a multiple-use reservoir at the Whitney site with a gross storage capacity of 721,000 acre-feet, of which 491,000 acre-feet would be allocated to flood-control

use and the remainder utilized for stream-flow regulation and power development. The Chief of Engineers recommended that the installation of the power-generating facilities be deferred until the market requirements made such an installation advisable. Justification of the project was based on a showing that the total evaluated benefits for flood control, power, and other purposes would exceed the total annual costs. The matter of cost allocation was not covered in the report.

The definite project report plan of 1945 provided for the construction of the Whitney Reservoir with a gross storage capacity of 2,017,500 acre-feet, of which 1,630,500 acre-feet would be utilized for flood-control purposes. No allocation of costs was proposed in the report.

(5) Bull Shoals project

The comprehensive plan for flood control and other purposes in the White River Basin authorized by the 1938 Flood Control Act was modified by the 1941 Flood Control Act to include authorization of the Bull Shoals project as recommended by the Chief of Engineers in House Document 917, Seventy-sixth Congress, third session. In that document the Chief of Engineers recommended construction of the Bull Shoals and Table Rock projects for flood control, the development of hydroelectric power, and other beneficial purposes. The definite project report for Bull Shoals was completed early in 1942. In both House Document 917 and the definite project report, the Bull Shoals project was planned on a multiple-purpose basis for power development as well as for flood control. The subject of cost allocation was not discussed in the reports.

In the Commission staff's studies of the Bull Shoals project in cooperation with the Corps of Engineers on such matters as the height of dam and the power installation, the project was considered as a multiple-purpose development.

(6) Table Rock project

As indicated above, the Table Rock project was recommended by the Chief of Engineers for flood control, power, and other purposes in House Document 917, Seventy-sixth Congress, third session. The 1941 Flood Control Act authorized the Table Rock project as recommended in that document for inclusion in the comprehensive plan for the White River Basin. In the studies relating to House Document 917 and in the definite project report studies of 1943 and 1944, Table Rock was considered as a multiple-purpose project from which the power benefits constituted a major share of the total project benefits. Also, in the extensive cooperative studies made by the Commission staff on such matters as the height of dam and the installed power capacity, the Table Rock project was considered on a multiple-purpose basis. None of these studies proposed allocations of project costs.

(7) Fort Gibson project

The 1941 Flood Control Act modified the comprehensive plan for flood control and other purposes for the Arkansas River Basin, originally approved by the 1938 Flood Control Act, to include the Pensacola, Markham Ferry, and Fort Gibson Reservoirs in accordance with the recommendations of the Chief of Engineers in House Document 107, Seventy-sixth Congress, first session. The report published in that document recommended the construction and operation of the three projects for the combined purposes of flood control and power. (The Grand River Dam Authority in fiscal year 1941 completed construction of Pensacola Dam under an FPC license.) In the economic studies presented in House Document 107 it was stated that the allocation of costs "between flood control and power development has been made by apportioning the costs of the three dual-use reservoirs on the basis of the cost of procuring the same degree of flood control and the same amount of power as independent developments." The definite project report, prepared in 1942, stated that no further economic studies of the project had been made in connection with that report.

The recent studies of the Corps of Engineers show that the investment allocated to power under the separate projects method would amount to $25,462,715 as compared with the $23,379,382 obtained under the separable costs-remaining benefits method. The corps' studies also show that a flood control only project at the Fort Gibson site would not be justified.

(8) Tenkiller Ferry project

The Tenkiller Ferry project for flood control was authorized by the 1938 Flood Control Act as a unit in the plan for the Arkansas River Basin as set forth in Flood Control Committee Document No. 1, Seventy-fifth Congress, first session.

The definite project report of 1940 presented two plans of development for the project, including a plan for flood control only as authorized and an alternative plan for flood control and power. In the economic studies of the alternative plan, the reservoir costs were allocated to flood control and power on the basis of the storage capacities assigned to these functions.

In a survey report prepared in 1941, the district engineer recommended modification of the authorized project to include power. The addition of power was justified on the basis of charging to it the incremental cost over the cost of the authorized flood control only project. This report was not submitted to the Congress so that the plan contained therein was not authorized.

The 1946 River and Harbor Act authorized the multiple-purpose plan for the Arkansas River Basin as set forth in the report of the Chief of Engineers, dated September 20, 1945, which was printed in House Document 758, Seventy-ninth Congress, second session. That report recommended modifications of the Tenkiller Ferry project to include power-generating facilities. The justification of the multiple-purpose plan was based on comparing the additional costs that would be incurred over the previously authorized basin plan with the corresponding additional benefits. These additional costs and benefits included the effects of providing for power development at the Tenkiller Ferry project.

In a report of survey scope prepared in 1947, the project for flood control and power was presented by the Chief of Engineers substantially as authorized by the 1946 River and Harbor Act. That report did not propose an allocation of project costs.

It is noted that the recent studies of the Corps of Engineers show that the investment allocated to power under the incremental cost-flood control as basic method would amount to $12,330,101 as compared with $14,139,075 under the green book method.

(9) Blakely Mountain project

The Blakely Mountain project was authorized by the 1944 Flood control Act substantially in accordance with the recommendations of the Chief of Engineers in House Document 647, Seventy-eighth Congress, second session. In that document the Chief of Engineers recommended construction of the project for flood control, power development, and other beneficial purpose. The Division Engineer's report, also contained in House Document 647, found that a development at the site for flood control only was not justified but that a development for flood control and power was economically feasible. The report of the Division Engineer also presented an economic analysis in which the cost of the reservoir had been tentatively allocated between flood control and power in proportion to the storage capacity assigned to the respective uses. Both the usable drawdown storage and the dead storage capacities were considered as assignable to power. The definite project report of 1950 did not include a proposal for the allocation of project costs.

The studies by the staff made in cooperation with the Corps of Engineers were based on considering the project as a multiple-purpose development. The staff recognized that the chief economic justification of the project resulted from its value for power purposes.

In connection with the above-mentioned tentative allocation, it is noted that the recent studies of the Corps of Engineers show that the investment allocated to power would amount to $27,536,000 under the proportionate use of capacity method as compared with $26,184,000 under the separable costs-remaining benefits method.

(10) Short Mountain project

The Short Mountain project is a unit in the multiple-purpose plan for the Arkansas River Basin authorized by the 1946 River and Harbor Act in accordance with the report of the Chief of Engineers, dated September 20, 1945, and the letter of the Chief of Engineers, dated March 19, 1946, both printed in House Document 758, Seventy-ninth Congress, second session. The project as recommended was for navigation, power, and other purposes as part of the over-all multiple-purpose plan. The principal benefits of the multiple-purpose plan were for navigation, flood control, and power development. The document did not present studies proposing allocation of costs for the proposed projects.

(11) Dardanelle project

Like Short Mountain, the Dardanelle project was authorized by the 1946 River and Harbor Act as a unit in the multiple-purpose plan for the Arkansas River Basin. Also like Short Mountain, the project was recommended by the

Chief of Engineers in the report printed in House Document 758, Seventy-ninth Congress, second session for purposes of navigation and power development as part of the over-all multiple-purpose plan. No proposal for the allocation of project costs was presented in House Document 758.

(12) Keystone project

In the 1950 Flood Control Act, the general comprehensive plan for flood control and other purposes for the Arkansas River Basin approved by the 1938 Flood Control Act and the multiple-purpose plan for the basin approved by the 1946 River and Harbor Act were modified by the substitution of the Keystone Reservoir project for the Mannford, Blackburn, and Taft Reservoir projects in accordance with the recommendations of the Chief of Engineers in Senate Document 107, Eighty-first Congress, first session. In that document the Keystone project was considered as a multiple-purpose development for flood control, navigation, power, and other purposes. Justification of the project was based on comparing the over-all benefits with the total project costs. No allocation of costs was presented in the report.

CONCLUSIONS

On the basis of the foregoing, the staff has reached the following conclusions:

(1) Because of the circumstances relating to project formulation and authorization and inasmuch as preliminary allocations made in 1944 using that method were considered in establishing present rates, the staff believes that the incremental cost-flood control as basic method of allocation should be adopted for the Norfork and Denison projects.

(2) The staff is of the opinion that nine of the projects—namely, Narrows, Whitney, Bull Shoals, Table Rock, Fort Gibson, Blakely Mountain, Keystone, Short Mountain, and Dardanelle—have been planned and authorized as multiple-purpose developments and that the allocation method adopted should reflect that fact. The staff believes that adoption of the separable costs-remaining benefits method of allocation for these projects is warranted.

(3) With respect to Tenkiller Ferry, it appears that the project was originally authorized for flood control only and that justification for the inclusion of power facilities was based on a comparison of the additional costs over the cost of the flood control only project with corresponding additional benefits. However, in the detailed planning and construction of the project, it was considered on a multiple-purpose basis. It is noted that the recent studies of the Corps of Engineers shows that the difference in the amounts allocated to power under the incremental cost-flood control as basic method and under the separable costs-remaining benefits method would not be large.

(4) In view of the above, the staff agrees generally with the Corps of Engineers in the selection of allocation methods for these 12 Southwest projects. It is pointed out, however, that the staff has not made a detailed review of the allocations prepared by the Corps of Engineers using these methods.

FRANK L. WEAVER,
Chief, Division of River Basins.

Comparison of results of cost allocation studies made by the Southwestern Power Administration and the U. S. Corps of Engineers

SOUTHWESTERN POWER ADMINISTRATION DATA

Project	Project construction cost [1]	Construction cost allocated to power [1]	Annual power charges [2]	Allocation method
Denison:				
2 units	$61,595,000	[3] $13,329,500	$583,895	Incremental—flood-control basic.
3 units	66,000,000	[3] 17,734,500	739,152	
Norfork: 2 units	28,800,000	12,750,000	558,075	Do.
Narrows: 2 units	13,450,000	2,883,584	155,706	Direct or exclusive power costs.
Bull Shoals:				
4 units	77,770,000	36,490,000	1,306,177	Incremental—flood-control basic.
6 units	83,385,000	42,105,000	1,549,467	
Fort Gibson:				
4 units	45,900,000	14,465,000	544,095	Do.
6 units	49,400,000	17,965,000	679,245	
Tenkiller Ferry: 2 units	24,250,000	10,185,000	352,050	Percentage of benefits as shown in hearings, July 1947.
Whitney: 2 units	41,794,000	6,516,300	267,895	Incremental—flood-control basic.
Blakely Mountain: 2 units	31,000,000	14,547,000	572,133	Ratio of power drawdown storage to total storage capacity.
Table Rock:				
2 units	76,340,000	38,910,000	1,294,000	Do.
3 units	78,240,000	40,810,000	1,365,113	
Keystone: 3 units	126,750,000	7,500,000	319,750	Do.
Dardanelle: 4 units	76,700,000	25,000,000	932,500	Ratio of power benefits to total benefits for the Arkansas River. Multipurpose plan.
Short Mountain: 4 units	101,300,000	20,000,000	771,000	Do.
Total, initial installation	705,649,000	202,576,384	7,657,276	
Total with added units	721,069,000	217,996,384	8,262,086	

U. S. CORPS OF ENGINEERS DATA

Project	Project construction cost	Construction cost allocated to power	Investment allocated to power [4]	Annual power charges [2]	Allocation method
Denison:					
2 units	$61,630,000	$19,410,000	$19,874,980	$970,865	Incremental—flood control basic.
3 units	67,100,000	24,880,000	25,481,980	1,219,865	
Norfork: 2 units	28,540,000	12,635,000	12,908,000	593,000	Do.
Narrows: 2 units	12,945,000	4,760,000	4,942,000	308,500	Separable costs—remaining benefits.
Bull Shoals:					
4 units	76,300,000	46,906,000	50,169,000	2,024,500	Do.
6 units	81,700,000	52,306,000	55,706,000	2,274,500	
Fort Gibson:					
4 units	43,882,000	21,331,000	23,379,000	1,102,300	Do.
6 units	48,292,000	25,741,000	27,899,000	1,323,980	
Tenkiller Ferry: 2 units	23,100,000	13,235,527	14,139,000	706,760	Do.
Whitney: 2 units	42,043,900	11,522,700	12,218,900	530,700	Do.
Blakely Mountain: 2 units	32,675,000	24,521,000	26,184,000	1,076,800	Do.
Table Rock:					
2 units	76,340,000	65,800,000	69,744,000	2,702,000	Do.
3 units	79,475,000	68,935,000	72,958,000	2,856,000	
Keystone: 3 units	126,750,000	35,174,000	37,812,000	1,600,000	Do.
Dardanelle: 4 units	80,838,000	[5] 55,000,000	58,600,000	2,300,000	Do.
Short Mountain: 4 units	101,300,000	64,830,000	69,506,000	3,033,000	Do.
Total, initial installation	706,343,900	375,125,227	399,476,880	16,948,000	
Total with added units	724,758,900	393,540,227	418,354,880	17,823,105	

[1] These construction costs do not include interest during construction. These are the same amounts listed in table 2 in SPA's pay out study, however, as investment costs.

[2] SPA used 100-year amortization; Corps used 50-year period. SPA's annual charges are based on construction costs (excluding interest during construction). Corps' annual charges are based on investment (including interest during construction).

[3] SPA has deducted estimated costs of project lands used for recreation and similar purposes; Estimated added project cost resulting from renegotiation of construction contract, and cost of protective security from projects prior to making the allocation. Corps did not deduct these amounts.

[4] Includes interest during construction.

[5] Corps allocation gave power allocation of $46,442,000 which was increased to $55,000,000 as judgment figure to include additional costs for dredging, etc., not available at this time.

Mr. JONES. Now, concerning the $418,000,000 figure, how is that reconciled to the authorization of the project when the cost factors were appraised in the authorization act?

Mr. BUCHANAN. How can that be reconciled with the original authorization?

Mr. JONES. Yes, sir.

Mr. BUCHANAN. That is one of the things we are trying to point out here in our report to the committee. We do not think that was done with sufficient——

Mr. JONES. Clarity?

Mr. BUCHANAN. Clarity at the time the authorization was made, and we think it should be done in the future.

Mr. JONES. The 12 projects were all constructed by the Corps of Engineers?

Mr. BUCHANAN. Eight projects are either constructed or under construction. Four have been authorized but they are not under construction.

Mr. JONES. All 12 of the projects have been authorized?

Mr. BUCHANAN. That is correct.

Mr. JONES. But eight are under construction or have been completed?

Mr. BUCHANAN. That is correct.

Mr. JONES. In those eight reports accompanying the authorization bill, what is the amount given in the economic justification of them that would be chargeable to power generation?

Mr. BUCHANAN. I think that is one of the difficulties with the authorization. It does not state with clarity, and therefore it is a matter of adjustment after the construction has been completed.

Mr. JONES. Mr. Chairman, do you not think that, in the authorization of these projects, the allocation of costs should be firm with respect to the division of costs imposed upon a project?

Mr. BUCHANAN. We believe that absolutely.

Mr. JONES. With a clear understanding both by the agency doing the work and also the Federal Power Commission for establishing the rate at which power is to be sold?

Mr. BUCHANAN. We believe that Congress in making the authorization for any project should specifically point out at that time the various allocations that go to the component parts of the project, so that when it is completed this question which we have been struggling with here in the Southwestern Power Administration situation will not arise at that time after the thing has been done.

Mr. JONES. Is that a general characterization of the Corps of Engineers, that is, in their failing to establish a cost index on projects?

Mr. BUCHANAN. I do not know.

Mr. MCWHORTER. I do not think that the Corps of Engineers in seeking the authorization of projects has ever attempted to say what part of the cost of a project or of the cost of the common works which we call joint costs should be charged to any particular function. But in each case they make a showing of economic justification.

Mr. JONES. They do, though, Mr. McWhorter, in presenting the economic justification of it, so as to have it included in bills. Say that the ratio is 1.1 to 1, for example, and then break it down and say that the ratio of benefits to hydroelectric power would be $2,000,000

and the annual cost would be $25,000,000, so that accounts for 8 percent, let us say, of the entire project.

Mr. McWHORTER. Yes. They go this far, Mr. Chairman: They estimate the annual benefits, i. e., the power benefits, navigation benefits, flood-control benefits, and so on. But in seeking to have projects authorized they do not go so far as to say what part of the capital costs should be allocated to each one of these purposes.

Mr. JONES. Do you think that that failure of the Corps of Engineers to make fixed allocations on projects should be rectified in a legislative fashion or by interagency agreement?

Mr. McWHORTER. Mr. Chairman, my thoughts on that are that when these proposals for the construction of multiple-purpose reservoir projects come before the Committee on Public Works, regardless of whether they are brought in by the Corps of Engineers or the Bureau of Reclamation or by any other construction agency, the committee should get the views of the best-informed people in the Government on the question of allocation of the costs of each project. Then the Committee on Public Works should include in its recommendation of the project specific proposals for the allocation of the costs.

Mr. JONES. What would be the situation, Mr. McWhorter, in a basin development program where the authorization given to the agency to commit work in certain areas is for a series of dams, and in the construction of those dams the agency occupies quite a period of time to completion, where one project has a relationship to another and we are trying to establish a component for the construction of all those dams. Would the Federal Power Commission give full faith and credit to those figures as reflected into the over-all basin project rather than the individual undertakings?

Mr. McWHORTER. I think that would be done particularly if the over-all basin project had been approved by Congress and it was reasonably certain that those projects would be constructed. You will note that some of these——

Mr. JONES. Of course, you know up here we are never certain what funds are going to be made available to these agencies to carry out that work.

Mr. McWHORTER. I just wanted to say some of these projects, particularly if they are storage projects, have value in that they benefit downstream projects either existing or prospective. Those values I would say could very properly be taken into consideration.

Mr. JONES. You think no questions would arise in those situations where you could not reconcile any component with the over-all program?

Mr. McWHORTER. I think it depends very largely on whether you are considering a single project or whether you are considering a group of economically feasible projects as a unit. If you are doing the latter you would work out your benefit-cost ratio for the group and you would determine your allocation of costs for the group, just as the Tennessee Valley Authority does. They did that first for three projects, you will recall, and then later, about 5 years ago, they did it for 16 projects.

Mr. BUCHANAN. I think that is being done in this Southwestern Power Administration.

Mr. JONES. Let us say we have 30 projects in all; 15 of them are complete. Let us say half of those 15, or 7 of those 15, have generation of hydroelectric power. They are constructed on a justification figure of all the projects being installed. At the completion of those 15 projects the rate by the building agency is determined on just half of the projects and the greater prospect is that the remaining projects will ultimately be built. What would be the attitude of the Commission in entertaining calculations based upon the estimate of production of those unfinished dams in a rate case?

Mr. BUCHANAN. Mr. Smith is our expert on the matter of rates.

Mr. CHARLES SMITH. The Commission heretofore has approved rates for projects which were in construction to the extent that they could then get a feasible rate for those projects without looking to the future. In the case of Bonneville the Commission looked at Bonneville alone. That is as far as it had to go at that time to get a reasonable rate. In the case of the Southwestern Power Administration it had to look beyond the projects in existence because the other projects were to be tied in to the power system and the rates were being fixed for the group of projects. In the case of the Southwestern Power Administration the Commission originally approved rates up to 1953 only with the idea that by that time we would have more information as to other projects. So I think it acts on a dual basis. Where the facts are adequate it proceeds on the basis of the projects already constructed, otherwise it must necessarily take into consideration the estimates for projects to be built.

Mr. ANGELL. Mr. Chairman, may I ask a question?

Mr. JONES. Mr. Angell.

Mr. ANGELL. You mentioned Bonneville, Mr. Smith, and the rate there being determined on Bonneville alone by reason of the fact that the other projects in the Columbia area at that time were most of them not even contemplated and none of them under construction. Now that many other dams which have been constructed or under construction, particularly Grand Coulee, and with McNary Dam coming on and Chief Joseph and the Dalles under construction, and Hungry Horse having been constructed, and a dam in Idaho, Albeni Falls, just over the line, having been started, all of which contribute power to the common good pool, is it contemplated that there will be a revamping of Bonneville rates due to the changed situation?

Mr. CHARLES SMITH. Yes, sir. I understand that there will be a review of those rates. I would like to point out the Commission has no jurisdiction to pass on the rates of energy generated at Grand Coulee. It fixed the rates for Bonneville. Grand Coulee energy is commingled and sold at the same rate which was approved by the Commission, but I understand from the Bonneville people that as these other projects come on the line they will make studies and review the rates. As a matter of fact, they have already asked the Commission to make an allocation as soon as possible of McNary Dam, so that they can proceed with that study.

Mr. ANGELL. Thank you, Mr. Smith.

Mr. MAGEE. Will the gentleman yield?

Mr. ANGELL. Yes.

Mr. MAGEE. Do I understand that you will never have anything to do with rates at Grand Coulee? Is that correct?

Mr. CHARLES SMITH. We have no jurisdiction over the rates at Grand Coulee. Yes, sir.

Mr. MAGEE. That is a reclamation project?

Mr. CHARLES SMITH. That is correct, sir.

Mr. WOOD. Mr. Chairman.

Mr. JONES. Dr. Wood.

Mr. WOOD. What are incremental costs?

Mr. BUCHANAN. Direct costs allocated specifically to one part of the project, such as power. Things that concern power only.

Mr. WOOD. And the costs attributed to flood control or navigation would be incremental costs to those departments?

Mr. BUCHANAN. Well, of course, flood control basically would be the dam structure itself.

Mr. WOOD. Is the dam constructed wholly for flood control?

Mr. BUCHANAN. That is one of the difficulties. Sometimes it is basically a flood-control project. Power is added. Those are the difficulties we run into in the allocation then between flood control and power, or flood control, navigation, and power.

Mr. WOOD. I am rather ignorant on this. I believe that perhaps I have learned something from listening to some hearings before the Committee on Interior and Insular Affairs. How would you estimate costs of a dam as applied to flood control? How would you estimate how you could possibly get any ratio of costs applied to flood control, or how would you know in the future whether any flood control would be needed, whether more flood control would be needed, or less, or whether you would have rainy seasons or would not?

Mr. BUCHANAN. What you are speaking of, I think, Dr. Wood, is the justification of the project at the time it comes before you. How is it justified?

Mr. WOOD. It would amount to that. Yes.

Mr. BUCHANAN. Mr. Adams, the Chief of our Bureau of Power, will give you the answer.

Mr. ADAMS. The Commission does not make the estimates of flood control. In the case of a flood control and power project the Commission furnishes the Army engineers the estimates of the power benefits, to which they add their own estimates of flood control; or, if navigation is involved, the navigation benefits. So the determination we make goes specifically to power and the power facilities that would go in the project.

The Army engineers combine those various functions and the benefits that go with them in determining the over-all benefits for the project. They determine also the costs that would be compared with them and determine the benefit-cost ratio.

Mr. WOOD. Then the other increments of costs on any project outside of power are determined by the Corps of Engineers or the Reclamation Bureau?

Mr. ADAMS. Yes, sir.

Mr. WOOD. And you make your incremental estimates separately, and then they combine them together to determine the amount needed for the appropriation?

Mr. ADAMS. Yes, sir. To determine the incremental cost of each function the cost with and without each added function is estimated: that is, the incremental power cost is the amount added to a flood control project only by adding power.

Mr. Wood. In a project such as Hells Canyon by using the incremental method tied in to a Federal power grid is it not possible that the actual estimates of figures for the construction of the dam, that is, the amount of the appropriation, could be materially lessened as an incentive to Congress to pass the appropriation bill? That could be done with the hope that if the power at least were to be tied in to the Bonneville grid later, that any deficiency in the cost of the building of the dam could be met by the sale of all of the projects if all of the dams were pouring their electric power into the grid. Therefore Congress would really never be in a position to get a definite and proper estimate of the actual cost or actual appropriation necessary for the building of a dam. Am I right or wrong? That is, you have a leeway there. This would apply only, of course, to the dams where the power output was designed to be turned into a grid composed of products of power developed at many dams, and some of which would be in operation, with others designed to come into operation later.

By the use of that backlog out there the actual cost of building the dam could be lessened so that it would be attractive to Congress, whereas if it were a single dam and no part of its cost could be allocated to firming up power, or to the sale of power in the grid, it could not be used to make up any deficiency in the appropriation cost submitted to Congress for the building of the dam. That is the point I am making.

Mr. Buchanan. Mr. Gatchell will answer that, Dr. Wood.

Mr. Gatchell. Doctor, you are dealing in that question with two phases of the problem that face you in the development of the Pacific Northwest: (1) When should a project be added to those that are now there under Federal construction or authorization. (2) How are you to determine who shall pay for that project?

Dealing first with the question of where you shall build and when, the Army engineers as all engineers must look at the geographical situation that is present. You have a reservoir site and water may be stored behind a dam of a certain height at that site so that you are able to determine a flood-control dam of a certain capacity. Now, in having that dam with that reservoir available, it is very desirable sometimes, and not in all cases, to put in power installations; the penstocks, the generators, the turbines, and the substations. Those facilities which are directly for power alone may be considered as having costs which are incremental to the cost of the whole project and, therefore, only the incremental cost of the power is used as the rate base.

If that rule is followed then the reservoir costs, the dam costs, and those facilities which really make possible the development of power but which are not solely for power, those costs are borne entirely by flood control.

Somebody pays for every dam that is built. The general taxpayers have paid for the flood-control works and Congress has followed the policy heretofore of requiring that flood-control be put in because the benefits that can be obtained from the development of a flood-control facility at a particular site are far in advance of the costs of putting that in. But if you take part of those common costs, namely, the dam and the reservoir, and those facilities which are useful for flood control and power, and maybe navigation and irrigation, as they are at Grand Coulee, and spread those joint costs around among the

several uses, that is, power, navigation and flood control, then the power rates can be based on a larger base and power can repay some of those joint costs.

That is the exact problem that was presented in connection with the Southwestern Power Administration in those facilities down there. When you add to your facilities as you did in the Columbia River Basin one dam after another, Congress has the problem to decide how it wants to integrate all of those facilities. It did provide in the Flood Control Act of 1944 that the Federal Power Commission should approve the rates for the sale of power from those projects constructed under that act.

Mr. BUCHANAN. But, Mr. Gatchell, let me interrupt. I do not think you are answering Dr. Wood's question. As I understand you, Dr. Wood, you are asking if an uneconomic project is added to a grid, or a group of other projects, is that possible to happen under the present system? Is that not your question?

Mr. WOOD. That is precisely it, sir.

Mr. BUCHANAN. Your answer to that, I would say, is that so far as the power component is concerned, it could not happen. When we go into the power phase of it we find out whether it is economic or uneconomic and if so, we so advise you.

Mr. WOOD. Yes, but the point I am after, Mr. Buchanan, is that I am not concerned with the charges for electric power in the slightest. I am not interested in that angle of it at all. I am interested in the relationship between Congress in the appropriation bills and the costs of building the dam and those costs being submitted to Congress. The particular question I am asking is if you are going to be able to submit a multiple-purpose dam, and then again if that multiple-purpose dam is tied into a Federal power grid is it not possible that the actual figures submitted to Congress for the building of that dam can be submitted at a much lower figure than the dam actually costs, with the hope or certainty on the part of the Federal Power Commission, or whoever wants the dam, of making that up through the sale of power in the many power projects pouring their electric power into the grid. Therefore Congress really never gets an opportunity to know the definite cost of building a dam because parts of that project may be hidden in a promissory note later on to the grid system.

Mr. BUCHANAN. I do not think that is possible, Dr. Wood.

Mr. WOOD. Why not?

Mr. BUCHANAN. Under the present system. I say that because you get actual figures of the cost of the dam. The matter of judging the benefits, which is the basis of finding out whether it is a feasible economic project or not and whether it is going to return the ratio of 1 to 1 or better—you get all of those figures now, and I think they are accurate. I do not think the Army engineers, or the Department, will deceive you on that, and certainly we do not on the power phase of it when we are brought into the picture.

Mr. WOOD. I do not say you have yet answered my question.

Mr. BUCHANAN. Here is an answer. Here is something you may be pointing toward. Take the Columbia River development. The really good sites for development of power are taken up now and they either have been constructed or they are under construction. You might say that from now on future projects that may come in on the Columbia River will not have the same economic worth. They will

not have the same economic advantage as the original projects that were constructed. So you can say that your costs are going to be built up. But that does not mean they should not be added to the Columbia or Bonneville system. You will finally reach a point where they cannot contribute anything at all to it, but I think that would probably be sometime in the future.

Mr. WOOD. I listened to a great deal of the testimony in the Interior and Insular Affairs Committee hearing in regard to Hells Canyon Dam, and the question was raised there. I think if my memory serves me correctly that the actual figures submitted were lower than what the dam would probably cost. The question was raised as to that point and the committee was informed that the incremental costs—I think I am beginning to understand the situation a lot more clearly now from your explanation, Mr. Buchanan—would come from the incremental part of it from the use of the power in the Bonneville grid.

I think I understand that part of it, but that left me a little at sea. It leaves me in this position now: Shall the incremental costs be considered in the building of Hells Canyon Dam?

Do I understand that the actual figures given of $380,000,000, or something like that, do represent the actual total cost of building the dam?

Mr. BUCHANAN. No, sir. The estimated costs. That would not necessarily be the actual costs.

Mr. WOOD. I can understand that, but incremental costs did not enter into that figure at all, or did they?

Mr. BUCHANAN. For each component part I would say incremental costs would come in. What is that situation?

Mr. ADAMS. In the case of the SPA projects the total cost of this group of projects is $724,000,000 for the 12 projects. The incremental cost as previously stated as having been presented by the Department of the Interior was $217,900,000. The amount suggested by the Corps of Engineers to be allocated to power was $418,000,000. The difference between that and the $724,000,000 of the total cost was charged to other functions, such as flood control and navigation. So incremental cost, of course, is included in the total cost of a group of projects; it is merely a derived figure or an estimated figure, knowing the total cost of the project and how the project is made up.

Mr. BUCHANAN. You are not on the subject. I do not think you have it.

Mr. ADAMS. I am giving you the Southwestern Power Administration's figures to illustrate the point.

Mr. WOOD. I understood that.

Mr. ADAMS. I do not have the Hells Canyon figures.

Mr. WOOD. I understood that, sir. So that really the costs submitted to Congress in an appropriation bill for the cost of building the dam, and the method of allocation of the component parts of that, is a bookkeeping job for the Department. Am I right?

Mr. BUCHANAN. No. That is one of the problems here. That allocation should be made for the benefit of congressional information at the time the authorization is made. That is the point we are trying to make here. That should be done initially.

Mr. JONES. In order that you would have firm figures to base a rate on for any project that is authorized, and so that you will have the

figures there and will not be left to speculate from one agency to the other as to what the cost of the project is in relation to the sale of electricity?

Mr. BUCHANAN. I will go you one better, Mr. Chairman. Not that we have that information, but that you have that information, and you have it initially. There is a difference on the Commission on this. Some of us feel we should not be in this picture at all so far as rate-making on Federal projects is concerned. Others believe that we should be. We have specific recommendations in my statement that I am filing today on that point. But if Congress has that information at the time the authorization is made, there is no reason, as I see it, why the agency cannot follow through on what Congress says shall be the basis for making rates.

Mr. JONES. And we would make an appropriation based on the estimate of costs and returns in a given project?

Mr. BUCHANAN. But that ought to be done initially, and not afterward.

Mr. JONES. Yes, sir. Do you suggest we should have legislation that would establish that sort of practice?

Mr. BUCHANAN. I think you at least should have the practice itself. Whether you eventlally put it in a legislative form or not, that should be a policy you should follow; and we are all agreed on it.

Mr. JONES. It is unfortunate we have not had a policy or some method by which we could determine those facts beforehand.

Mr. BUCHANAN. We want to be helpful and point out what we can about these things.

Mr. WOOD. I think I have one more question, Mr. Chairman.

Mr. JONES. Proceeed, Dr. Wood.

Mr. WOOD. The reason I am particularly interested in this matter is that the Hells Canyon Dam is in my district.

Mr. BUCHANAN. I see.

Mr. WOOD. I have been informed by some competent engineers that the Hells Canyon Dam in itself, from the standpoint of power, that is, from the average flow of the Snake River, is not going to be able to build up a reservoir sufficient to generate the amount of power expected in the determination of costs without infringing the water rights above the dam, in which case, of course, the Federal Government is going to get into trouble with an infuriated bunch of farmers in south Idaho. The statements of that engineer may be true that Hells Canyon would not be able to produce the amount of power to make it a commercially good investment from the standpoint of the Government and of the Congress, if Hells Canyon Dam should be constructed and if the State of Idaho is able to hold on to its water rights for the benefit of these farmers.

The point I am getting at, or that I have been trying to get all the way through, is would that deficiency in output of Federal power then be charged to the grid system at Bonneville, so that in effect the beneficiaries of the Bonneville power grid would be paying in cost of electric power for something which the Hells Canyon unit is not pouring into the grid?

Mr. BUCHANAN. If it is intended to go into the Bonneville grid and those matters work out as you have outlined them, then I think that would be the result. However, Dr. Wood, Hells Canyon Dam is a

Reclamation project. We are not in it. I think the difference there is——

Mr. WOOD. I think it has no reclamation value whatsoever. Not even a half of 1 percent.

Mr. BUCHANAN. I mean, it is not before us in that form. I think the difference is that the Hells Canyon Dam as proposed by Interior is a high dam. The opposing proposition as proposed by Idaho Power is a series of low dams.

Mr. WOOD. I am not representing the Idaho Power.

Mr. BUCHANAN. We are not in a position to give you any information concerning that.

Mr. WOOD. I am merely interested in my taxpayers.

Mr. BUCHANAN. I would suggest you address your question to Interior who, I understand, will follow us in this hearing.

Mr. WOOD. That is before another committee and I cannot address my questions to them, so I thought I would tackle you.

Mr. JONES. Mr. Chairman, I do not think we have the dam Dr. Wood is discussing. There is no license outstanding for any private companies to develop projects on that site, is there?

Mr. BUCHANAN. No.

Mr. JONES. The only project out there is the one proposed by the Department of the Interior.

Mr. BUCHANAN. We have two applications for low dams from the Idaho Power, I believe.

Mr. JONES. Hells Canyon is being proposed by Interior and you will not be called upon to make any rates for that project.

Mr. BUCHANAN. That is correct. Not that we know of.

Mr. WOOD. Mr. Chairman, I know I am going a little afield on this.

Mr. JONES. It is a very important project.

Mr. WOOD. I cannot quiz the Department of the Interior and I have been very much interested in and very much enlightened by what Mr. Buchanan said.

Mr. JONES. You brought out a good point there. Mr. Curran.

Mr. CURRAN. Before dropping discussion of Southwestern Power allocation entirely, I would like to have two points brought out. The 12 projects involved were authorized upon recommendation of the Public Works Committee or a predecessor committee. At the time those were authorized there was presented by the Corps of Engineers a statement of benefits and costs. There are now these two allocations of cost, one of $418,000,000 and the other of $218,000,000.

Have the studies of the Federal Power Commission indicated which of them is more nearly in line with the benefits from power that were originally presumed to be involved?

Mr. BUCHANAN. Mr. Adams will answer that.

Mr. ADAMS. The calculated benefits in terms of the costs of building an alternative steam power plant which would provide the same amount of power are sufficient to cover either allocation if purely on a total value basis.

Does that answer your question?

Mr. CURRAN. Not quite. Out of the total Federal investment it was originally considered that the benefits would exceed the cost, and that presumed a certain benefit from power. If you go ahead now and have too low a rate for sale of power it could be said that the benefits

do not show up. If the benefit-cost ratio as originally computed anticipated 40 percent of the cost to be carried by power, and the allocation is different, then power does not carry its planned share. What I am wondering is whether either of these two figures, is more nearly in line than the other with the original return as presented to the Public Works Committee. Or has there been no study on that and you are unable to answer?

Mr. ADAMS. I do not believe that any separate study of the power return was submitted along with the project justification, but the total power benefits as estimated by the Federal Power Commission at that time were included along with the total flood control benefits in determining the over-all benefit-cost ratio of the project. So far as I know there was no separate determination of what would be the return on the power at the time of the justification.

Mr. JONES. The question is which is the best figure, that is, the $418,000,000 figure or the $218,000,000 figure.

Mr. BUCHANAN. Mr. Chairman, on that that is where the real controversy comes in. The $418,000,000 figure is based on our normal approach to allocation on other projects. It is based on the evaluation of power in the terms of steam electric power. That is what it really amounts to. That would be a ceiling. From there on down the point is how far down. I think the bottom of the picture is the incremental cost approach. If your revenues or rates are based on incremental cost you are at least returning the cost of the specific facilities that are used in generating power.

Mr. JONES. Then your studies at the present time would not indicate which figure of the two of those cost allocations, that is, of the Corps of Engineers or of the Southwestern Power Administration, is the more nearly accurate? You have derived no conclusion with respect to which is the more appropriate figure on which to calculate a rate?

Mr. BUCHANAN. The one approach is to compare it with commensurate steam generated power on the one hand and then the actual cost of the facilities that are used exclusively for the generation of power in these projects.

Mr. JONES. Why do you go about it making steam generation a comparable figure for arriving at some rate?

Mr. BUCHANAN. I will give you my own answer to that. I think the basis of that approach is that steam generated power is steady and consistent. Hydroelectric power, as we point out in our statement, is generally used to carry the peak load.

Mr. JONES. You have a regular stream flow in the area and continuous studies that would generally reflect what the hydro capacity is that could be expected out of those streams, do you not?

Mr. BUCHANAN. Well, I think the best illustration I can think of right now is the St. Lawrence, which is a good example of firm power. It has a stream flow variation of about 2½ to 1. Going back to the Southwestern Power Administration, the stream flow there varies widely. There are extreme fluctuations and its principal value is that it can be used only for peaking.

Mr. JONES. Of the total amount of power in the Southwestern Power Administration what is the ratio of steam and the ratio of hydro?

Mr. BUCHANAN. It is all hydro.

Mr. McWHORTER. In these 12 projects it is all hydro.

Mr. ADAMS. They have no steam plants of their own. They are tied in to the existing systems of the area, which do have a considerable amount of steam. I think the ratio in the area is about 90 percent steam power today for all facilities.

Mr. JONES. I believe they are proposing some steam generation.

Mr. McWHORTER. If they are not, they probably will be.

Mr. BUCHANAN. That generally follows, Mr. Chairman. In developing hydroelectric projects eventually they have to. The output is limited and when that saturation point is reached they have to go to steam. That always follows, I think.

Mr. JONES. Sometime I would like to have the committee go into that in a little bit more detail if you are available, Mr. McWhorter, because that brings a new aspect in as to how you determine rates based on a steam generation potential. Do you follow that in all cases?

Mr. McWHORTER. I think you should be given a little further information on that subject. Suppose you were considering a project for power development only; not a multiple-purpose project. If the cost of power from that plant would exceed the cost of power from a new steam electric plant in that same locality then you would not build the hydro plant. You would put in a steam plant and get your power cheaper. So that manner of ascertaining power values on the basis of alternative steam electric costs simply fixes the maximum rate that could reasonably be charged under any circumstances; otherwise you could get power cheaper from another source.

Mr. JONES. Why do you have to build upon a hypothesis to obtain a rate when Congress authorized the project and it is already constructed? Why do you not base your rates on the actual cost rather than some hypothetical figure?

Mr. McWHORTER. Actually, Mr. Chairman, the rates are based on actual costs; that part of the actual costs that is assigned to power. The only reason for making this other calculation is to show the very maximum that those rates could be.

Mr. BUCHANAN. Mr. Chairman, I think that this possibly may clear it up. This method of comparing the hydroelectric with the steam generated power is used in justifying the project initially. After it is constructed then that does not necessarily enter into the picture, but to justify it initially so far as power is concerned we would have to show that the hydroelectric power could be generated cheaper than a comparable steam plant.

Mr. JONES. These two figures submitted here, the $418,000,000 figure and the $218,000,000 figure, do those embrace some question as to what alternate plants could be put into operation?

Mr. McWHORTER. All those figures mean is that the $418,000,000 figure is based on the cost allocation that the Army engineers would use if they had the sole authority. The $218,000,000 represents the cost that would be carried by power if the Department of the Interior had complete authority to do all these things. That is all that means.

Mr. JONES. If the rates of the Southwestern Power Administration were based on the $218,000,000 figure, would it repay to the Federal Government the amount of money we have invested in those projects over a normal period of time?

Mr. McWHORTER. It would repay the $218,000,000 under the program set up by the Department of the Interior, with some of those facilities to be amortized over a period of 100 years.

Mr. JONES. That is based on a 100-year figure?

Mr. McWHORTER. For some facilities. The Department of the Interior feels that a dam, for instance, which will last much longer than 50 years, should be amortized over a longer period. In the case of Bonneville, Congress said the cost should be amortized over a reasonable period of years, and the Federal Power Commission adopted a 50-year period. In Mr. Buchanan's statement this morning he mentioned that fact.

Mr. BUCHANAN. The basis of the rate-making, Mr. Chairman, is that you take one or the other of these figures, that is, the $418,000,000 of the Army Engineers in which the——

Mr. JONES. Is that $418,000,000 a 40-year figure?

Mr. BUCHANAN. That is what I am getting down to. Or you take the $218,000,000 of Southwestern Power Administration. You apply to that the rate-making formula. The normal rate-making formula of the Southwestern Power Administration which we use in all of our rate-making approaches contemplates a 50-year figure for amortization of the cost and of the investment. It brings in other factors. In this case we did not apply that. First of all, we departed from what you might call the rate base—the allocation of costs where we usually pull in some joint costs. We departed from that and went into the incremental costs. That is what it amounted to. We did not say so, but that is what it was. We took the lower figure of $218,000,000. Then instead of using the 50-year figure we also took the Southwestern Power Administration's figure, which was an amortization or a service-life basis. In other words, some parts of the project would wear out in 30 years, some would last 70 years, and some would last 100 years. That is a service-life approach. We took that basis with a figure of 100 years and not to exceed 100 years, and on that basis we approved those rates. It is not our normal rate-making approach.

Mr. JONES. It is a long time, Mr. Chairman. One hundred years is a long time.

Mr. BUCHANAN. Those dams will last 100 years and probably more, I think, but it is not our normal approach and we do not believe it is a proper approach.

Mr. CURRAN. Mr. Buchanan, what you said, as I understand it, is that the rate schedule you have approved is not the one that supports your Bureau of Power's conclusion as to allocation of cost.

Mr. BUCHANAN. That is right.

Mr. CURRAN. In other words, the Commission reversed the Bureau.

Mr. BUCHANAN. It does not meet our normal standards. That is correct. But, Mr. Curran, I want you to understand this: It complies with the law we were working under. We were working under the 1944 Flood Control Act and the standards the Congress set up we have fully complied with. We just do not think those standards are right. That is the point.

Mr. JONES. That is something very interesting.

Mr. WOOD. May I ask a question, Mr. Chairman?

Mr. JONES. Yes, Dr. Wood.

Mr. WOOD. These 12 dams in the appropriation bills have been introduced and passed by Congress. They have been authorized, and eight of them, I think you said, are either finished or under construction.

Mr. BUCHANAN. They are all authorized by Congress.

Mr. WOOD. The only thing of interest to the Congress, then, in regard to this matter, is that that has been complied with. It really does not make any difference. Either figure complies with the acts of Congress in authorizing these dams. The only difference it makes is in the rate making. Is that right? That is, the difference between the $418,000,000 and the $218,000,000 is for rate-making purposes, and has nothing to do with the cost of the dams.

Mr. BUCHANAN. That is correct. That is all. The capital cost. Yes.

Mr. WOOD. That is all.

Mr. MAGEE. Mr. Chairman, on the multiple-purpose dams along the Columbia River, we will say, as I understand it the public organizations under the basic law have had first rights to the power, and I understand that surplus power is sold to private electric-power companies. Does your Commission make those contracts with the private-power companies?

Mr. BUCHANAN. No, sir; we do not. Nor do we want to.

Mr. MAGEE. You have nothing to do with that?

Mr. BUCHANAN. No.

Mr. MAGEE. Even though it is out of your jurisdiction how is that handled? By the Department of the Interior?

Mr. BUCHANAN. You are speaking of Bonneville?

Mr. MAGEE. Yes; let us speak of Bonneville.

Mr. BUCHANAN. Any project that is constructed by the Department of the Army under the 1944 Flood Control Act, the power generated at those projects is sold and administered by the Department of the Interior.

Mr. MAGEE. Yes.

Mr. BUCHANAN. And they make the contracts and handle it.

Mr. MAGEE. That is all.

Mr. JONES. Mr. Chairman, I would like to make inquiry as to the general provisions contained in licenses issued to private builders of structures on navigable streams. What limitations are imposed upon the use of those dams in the case of floods? Do they have any responsibility to use those reservoirs for storage of flood waters, or are they permitted to use them as they see fit?

Mr. BUCHANAN. If they are constructed for power they are power projects and they probably would have little value as flood-control projects. I feel sure of that. Mr. Adams will elaborate on my statement.

Mr. ADAMS. In some cases where flood control can be accomplished within the over-all operation and purposes of the project, flood control is provided. A case in point is the Osage Dam, that is, the Bagnell Dam on the Osage River, constructed by the Union Electric Co. of Missouri. Complaint was made as to the operation of that reservoir, the claim being made it was aggravating floods on the river. The Commission made an investigation and set rules and regulations for operating the reservoir to obtain such flood benefits as could be accom-

plished consistent with the primary purpose for which the project was built.

Mr. JONES. Is there anything in the license that would protect the future Federal interest in any of those streams respecting flood-control works that could be accomplished on a given stream?

Mr. ADAMS. There have been cases where the Federal Government, for instance——

Mr. JONES. I mean the license itself. Does that have a pertinent provision?

Mr. MCWHORTER. Generally not. No.

Mr. BUCHANAN. I do not believe so, Mr. Chairman.

Mr. JONES. Why should it not have some provision that would protect the future Federal interests in flood control?

Mr. BUCHANAN. Of course, all licenses are issued on a 50-year basis and at any time the Federal Government can step in and condemn and take over the project.

Mr. JONES. That is true. We would not have to have a license of the Federal Power Commission if the Federal Government wanted to exercise the right of eminent domain. That is one of the inherent things possessed in our Constitution, but I am talking about the licenses now. What provisions are made in those licenses themselves?

Mr. BUCHANAN. None.

Mr. JONES. Should there not be a provision in there?

Mr. BUCHANAN. We have never really considered the matter, Mr. Chairman. It has never been posed to us before that we know of.

(Subsequently, the Federal Power Commission advised that some licenses contained provisions for flood control and others do not. It is not the standard practice of the Commission to include such provisions. However, they could be where the projects contemplate large reservoirs.)

Mr. JONES. The question has arisen before the committee in several instances that there was not proper coordination between the private dams, the Corps of Engineers dams, and the Department of the Interior dams when they were in the same general location, and they did not carry out a coordinated flood-control program, and that control of the situation by the issuance of a license is likely to arise.

Mr. BUCHANAN. I do not see how it could arise under the license unless the Corps of Engineers or some party came in and raised the question.

Mr. JONES. All right. Let us take a dam on the Coosa River, Mr. McWhorter, where the Alabama Power Co. is the licensee.

Mr. MCWHORTER. That is right.

Mr. JONES. They have a dam there with an unusual amount of storage capacity. Suppose that a flood was occurring down at Montgomery on the Alabama River and that the Corps of Engineers would ask the Alabama Power Co. to store water in that dam. The Alabama Power Co. refuses. Would the Federal Government be able to do anything about it?

Mr. MCWHORTER. I do not think they could. I do not see that they could under the existing law.

(Subsequently, Mr. McWhorter advised the subcommittee that under the license for project 349, Martin Dam, of which Mr. Jones was speaking, there was no authority for the Federal Government to act.

However, under the license for project 618, Jordan Dam on the Coosa River, the Federal Power Commission could require operation of the reservoir to control flood waters.)

Mr. WOOD. Mr. Chairman, is it not a fact that in most dams, whether private or federally owned, they would be only too anxious to store water back of the dam?

Mr. JONES. Yes, but those questions were put to the committee.

Mr. WOOD. It seems to me that the trouble would mainly come the other way. I think the dams, no matter who owns them, are very anxious to get enough water back of the dam to protect their power.

Mr. BUCHANAN. That is basically the approach, but when we issue a license the license must be fitted into a comprehensive program for the development of that particular river basin. I do not think the question of putting flood control into our licensing has ever come up before.

Mr. JONES. Then the situation is likely never to arise.

Mr. BUCHANAN. The situation never has been posed to us before, so I would say it never has.

(Subsequently, the Commission Chairman, Mr. Buchanan, advised that the situation has arisen in a few cases on which he wished to submit a statement for the record. The statement follows:)

EXPLANATORY STATEMENT CONCERNING AUTHORITY UNDER THE FEDERAL POWER ACT TO IMPOSE CONDITIONS IN THE INTEREST OF FLOOD CONTROL

Section 10 (c) of the Federal Power Act provides, in part:

"That the licensee * * * shall conform to such rules and regulations as the Commission may from time to time prescribe for the protection of life, health, and property. * * *"

Prior to 1937 the Commission issued 26 licenses, which are at present outstanding, and which required the licensee, in the use, storage, and discharge from storage of waters affected by the license, to be controlled by such reasonable rules and regulations as the Commission may prescribe in the interests of flood control and of the fullest practicable use of such waters for power purposes.

Since the passage of the Flood Control Act of 1936, similar license conditions, when used, have generally related to rules and regulations for the protection of life, health, and property and the fullest practical use of water for power purposes and other beneficial public uses.

License conditions of the two types mentioned above were not included in all licenses, but only where the physical capabilities of the project facilities made their inclusion advisable.

These general conditions have been interpreted to require operation of a licensed project so as not to aggravate floods over what would occur under natural conditions as if the project were not in existence. In certain cases, the Commission has supplemented the general condition with a specific rule of operation during times of flood—such as for the Union Electric Co. Bagnell project No. 459 on the Osage River in Missouri, the South Carolina Electric & Gas Co. Saluda project No. 516 in the Saluda River in South Carolina, city of Seattle Ross project No. 533 on the Skagit River in Washington, and the proposed city of Tacoma Mossyrock project No. 2016 on the Cowlitz River in Washington.

Aside from the question as to whether the Federal Power Act carries the necessary authority, the Commission has not required, in licenses, provisions for positive beneficial flood control (that is, provision for flood control in excess of that required for nonaggravation of floods) except in special cases where the Federal Gvernment made provision for a contribution for the positive flood control or the positive flood control could be obtained without material interference with the power operation or with a relatively small additional investment over that required for the power projects. These are several reasons for this position.

In the flood-control acts beginning with the 1936 act, the United States has assumed the responsibility for flood control on a nonreimbursable basis. It does not seem equitable to require a licensee and its consumers who are tax-

payers to provide positive flood control at their own expense, while other groups of citizens are provided with flood control at no expense except through the payment of taxes. Furthermore, a licensee has no means of collecting revenue on the additional investment necessary for positive flood control.

If the investment for power and positive flood control are greater than can be supported by power revenues, a potential power developer could not afford to construct a joint power and flood-control project. The enforcement of such a requirement without Federal subsidy would retard the development of the Nation's water resources.

With regard to the special cases referred to above, the 1938 Flood Control Act authorized a participation not to exceed a cost of $2,000,000 by the United States for flood control in the Blakely Mountain project on the Ouachita River in Arkansas. At that time this project was to be constructed under the license for project No. 271 by Arkansas Power & Light Co., but was later eliminated from the license for failure on the part of the licensee to start construction within the time specified in the license. The project is now under construction by the United States.

The licensed Grand River Dam Authority Pensacola project No. 1494 on the Grand River in Oklahoma has provision for positive flood control. This project was financed by PWA loan and grant, and the United States at its own expense provided the land necessary for the top 5 feet of storage capacity.

The license for the city of Seattle Ross project No. 553 requires the reservation of 200,000 acre-feet for flood-control storage during the period November 1 to April 1 each season upon the installation of spillway gates on the Ross dam. This is being done at the licensee's expense and the use of this storage for flood control during the specified period will not interfere materially with the power operation of the project.

A similar flood control reservation is provided for in the license for the proposed city of Tacoma Mossyrock project No. 2016 on the Cowlitz River in Washington. Here again, the use of the storage for flood control during the specified period will not interfere materially with the power operation of the project.

Mr. JONES. Let us take another situation. Suppose a licensee operating a dam on a given stream is just going about its business and later on after it has put it in operation the Federal Government under the flood control or reclamation authority was to construct a dam that would increase the generating capacity of the dams below where the licensee is operating. Would that increase in generation be a payable item to the Federal Government?

Mr. BUCHANAN. Yes. They pay what they call headwater benefits.

Mr. JONES. So that is a condition of all licensees, that they would pay for increased generating capacity?

Mr. BUCHANAN. That is right.

Mr. JONES. Does the Corps of Engineers in making their estimates of benefits on a project take into account the returnable items that go into the Federal Treasury by virtue of that increased generation?

Mr. BUCHANAN. Mr. Adams will answer that, Mr. Chairman.

Mr. ADAMS. The Corps of Engineers in making their estimates and determining their benefit-cost rations under such a condition includes as a benefit the downstream benefits to any existing facilities. To that extent it is included in the formulation of the project.

Mr. JONES. How do you determine how much water is being used to increase the capacity of the dam lower down in making your assessments against the licensee?

Mr. ADAMS. Benefits are determined on the basis of the expected operation of the upstream reservoir over the period of years or over the experience that you may have when the determination is made. The Federal Power Act under section 10 (f) makes provision for determination of benefits from a Federal reservoir to a downstream plant.

Mr. JONES. Is that an actual benefit or a speculative benefit?

Mr. ADAMS. It is supposed to be an actual benefit, although it can be estimated in advance if that is necessary.

Mr. JONES. And agreed upon?

Mr. ADAMS. I do not think it necessarily would be agreed upon.

Mr. BUCHANAN. It probably would not be wise to agree upon it because it can be actually determined afterward.

Mr. JONES. Are they billed per annum for those water uses, or how is that estimated and how is it paid?

Mr. MCWHORTER. The benefited project pays the upper project each year the amount fixed by the Federal Power Commission as being an equitable share of the annual charges for interest, maintenance, and depreciation on the headwater storage improvement.

Mr. JONES. Then it is an estimated rather than an actual benefit?

Mr. MCWHORTER. Well, it is determined, or you might say closely estimated after the benefits have actually accrued to the downstream power developer.

Mr. JONES. Suppose you have a licensee and you estimated that the waterflow in the project would be a certain volume of water. At the end of the year you have a dry season and have only one-half of your estimate of water. What would be the rights and remedies of the licensee to recover for that?

Mr. MCWHORTER. That is not the way we are doing it, Mr. Chairman. We determine those benefits to the downstream power developer annually after he has gotten the benefits.

Mr. JONES. So at the end of a fiscal period you bill the licensee for whatever water benefits accrued to him by virtue of that upstream structure?

Mr. MCWHORTER. We require him to pay the upstream developer.

Mr. JONES. To whom does he pay that?

Mr. MCWHORTER. He pays it to the owner of the headwater improvement, that is, the upstream project.

Mr. BUCHANAN. If it is a Federal project it goes into the Federal Treasury.

Mr. MCWHORTER. Exactly.

Mr. JONES. Are assessments being made on all licensees where that situation I have just described exists?

Mr. BUCHANAN. No.

Mr. JONES. Why are they not being made?

Mr. BUCHANAN. Well, because a lot of them are in process of calculation.

Mr. ADAMS. There is one case where such payments are being made in California, between two operators, one being the Pacific Gas & Electric Co., and the other the Southern California Edison Co. The downstream beneficiary makes annual payments to the upstream project in accordance with the determination made annually by the Federal Power Commission, after the benefits have been accomplished.

Mr. JONES. Has that been carried out in every year in which the upstream structure has been in existence?

Mr. ADAMS. Yes, sir.

Mr. JONES. Has the cost of assessments of the licensee been computed in every instance where projects are outstanding like that?

Mr. BUCHANAN. Mr. Adams, would you tell the chairman just what studies are being made now in connection with headwater benefits.

Mr. ADAMS. That initial study in California is the only one that has actually been completed and where assessments are now being made. Others are under investigation in other parts of the country. For instance, in the Columbia River Basin during the past year an investigation has been in progress to determine the downstream benefits to the Rock Island project from the Grand Coulee project.

Mr. JONES. How long have those investigations been going on to determine the cost to the licensee?

Mr. ADAMS. It is only in the last few years that we have undertaken or begun to undertake them on a larger scale, because Federal projects are coming into the picture now.

Mr. JONES. When a Federal project is proposed and it is considered that by the construction of an upstream structure it will increase the generation of the downstream licensee a thousand or so many kilowatt-hours, do you take that figure as being sound and proceed with your assessments at the time it goes into operation, or do you delay it until such time as you can make an independent survey and investigation?

Mr. ADAMS. We make our investigation at about the time of the beginning of the operation of the project. For instance, the Alatoona project in the southeast has only recently been completed and we are now making an investigation to determine the benefits following the first year's operation there.

Mr. JONES. Has that always been true of every project where you have that situation?

Mr. ADAMS. We have not had sufficient staff to make all of them that are needed, but as the Federal projects are now coming in we are endeavoring to keep up with the studies for the Federal projects.

Mr. JONES. Does the Corps of Engineers get your estimate prior to the submission of estimates of costs and benefits as to the potential of increased generating capacity of a licensee which would make a reimbursable item to the Treasury of the United States?

Mr. ADAMS. At the time they make their estimates for the projects they seek the assistance of the Federal Power Commission in determining the downstream benefits, if any.

Mr. JONES. So all of the projects like that are being put under investigation now to determine what reimbursement the licensee would make?

Mr. ADAMS. We are being called upon to assist them in any new investigations of that nature.

Mr. WOOD. May I ask a question, Mr. Chairman? Let us reverse the process. Supposing you have a private dam upstream from a lately constructed Federal dam. Would the same rule apply contrariwise?

Mr. BUCHANAN. There is a difference of opinion on the Commission with respect to that. I stand corrected. Under the existing law it would not apply.

Mr. WOOD. Is that just?

Mr. BUCHANAN. Well, personally I think it is.

Mr. WOOD. Why?

Mr. BUCHANAN. There is a difference of opinion on the Commission in that respect. Why? Because I am presuming now that the upstream, that is, the headwater improvement is a licensed project, licensed by the Government to some private individual, corporation,

or what not. But the very fact that they are on a Federal stream and they have a Federal license indicates they are there by permission of the Federal Government. Therefore, why should a Federal project downstream return to a licensee or permittee of the Federal Government money that the Federal Government—not money, but return money to that licensee when it is there by sufferance of the Federal Government?

Mr. WOOD. I see.

Mr. BUCHANAN. That is not an unanimous opinion of the Commission, but that is mine.

Mr. WOOD. There happens to be a similar set-up in my own district right now. One is the Washington water power dam which is being built at Cabinet Gorge and the other is the Federally constructed project at Albeni Falls. Both are in process of construction. However, there is a lake intervening so I assume it would not apply.

Mr. MCWHORTER. In that case, Dr. Wood, the Cabinet Gorge project will hardly have any storage to benefit anything downstream. It is more like a run-of-the-river project, I believe.

Mr. WOOD. Yes. I am very familiar with it.

Mr. BUCHANAN. Mr. Chairman, Commissioner Smith is here also, and in connection with the statement I made on the Southwestern Power Administration contract that was recently approved by the Commission he would like to add a few words to what I said.

Mr. JONES. We would be delighted to have you.

Mr. NELSON LEE SMITH. Thank you very much. I have been sitting and listening with a great deal of interest, and it is sometimes easier when you are listening than it is when you are on the firing line to see possible confusion regarding particular matters. I thought there might have been, unintentionally, a blurring in respect of the discussion of the $418,000,000 Army engineers allocation and the $217,000,000 Southwestern Power Administration's allocation in the earlier discussion on that point.

I think it ought to be pointed out that, even on the Army engineers $418,000,000 the allocations at Denison and Norfork are also on an incremental cost basis, accounting for roughly, as I figure it, about 20 percent of the total investment. That is a detail which I thought it might be of some assistance to the committee to clarify in its consideration of this very important matter of cost allocation.

Mr. JONES. It is a 20-percent factor, you say?

Mr. NELSON LEE SMITH. No, sir. I say those investments at Denison and Norfork represent about 20 percent of the total investment estimated in the 12 projects.

Mr. JONES. I see.

Mr. NELSON LEE SMITH. Secondly, some reference was made to the presence of steam in the Southwestern Power Administration's system. It is true no steam would be necessary or is included in the eight interconnected projects required to serve the aluminum load involved in that particular rate which was approved. My understanding is, however, that in the over-all justification presented by the Southwestern Power Administration there is represented for firming-up purposes about 115,000 kilowatts of steam, owned not by the Southwestern Power Administration—Congress having not appropriated for such construction—but owned by the so-called Super-Co-ops and operated, in effect, for the Southwestern Power Administration.

Thirdly, I think in Chairman Buchanan's reference to the pay-out, his understanding and mine in respect to the pay-out under the approved rate contract are a little bit different. My understanding is that the rates which we have approved will yield to the Government in repay something over incremental cost, although a good bit less than the cost at allocated by the Army; but something over incremental cost over something like a period of 50, rather than 100, years. I believe the staff agrees that I am correct.

Mr. JONES. At that point let me ask this question: Does the difference in years account for the difference in the figures of $418,000,000 and $218,000,000?

Mr. NELSON LEE SMITH. No, sir. That has nothing to do with it. That is the difference in terms of allocation method only. Then you have the further question of the amortization period. The two are related but separate things. They are related because in the computation of the allocation you would give some weight to the benefits which in turn would be calculated over a period of time.

If I might have just a minute or two more, I had one or two comments to make other than that.

Mr. JONES. Yes, sir.

Mr. NELSON LEE SMITH. It runs to both the chairman's question and the question of Congressman Wood as I understood it. I think it is important to bear in mind the distinction between the justifications that are presented in Congress when projects are under consideration for construction and the ultimate question of who is going to pay for what. I think that was implicit, at least in Congressman Wood's question.

When these projects are justified for appropriation purposes, as the questions of some of you gentlemen have indicated, power values are included within the benefits estimated to determine the cost-benefit ratio. The power values—those submitted by the Army engineers—are computed by the Federal Power Commission's staff, and so far as I know, are fully relied upon.

Mr. JONES. At that point, why should the Federal Power Commission be called upon to make an estimate of power benefits to a construction agency that is going to have to report to Congress on the figures, and then the agency goes back to the Federal Power Commission and there is some question as to those figures?

Mr. NELSON LEE SMITH. I do not think there ought to be any question as to those figures, and that is my point. The reason, however, why the matter is referred to us in the first place is that that is what the Congress set up as the procedure under the Federal Power, Rivers and Harbors, and Flood Control Acts for certain projects, and the procedure that is voluntarily followed under the so-called interagency agreements with respect to other types of projects.

We are supposed to know something about the power aspects and to make recommendations as to the inclusion of power or noninclusion in these multiple-purpose projects.

Mr. JONES. Did they consult the Federal Power Commission on all 12 projects?

Mr. NELSON LEE SMITH. I cannot answer that question, because I do not know whether all 12 have yet been submitted.

Mr. JONES. Of the eight?

Mr. NELSON LEE SMITH. I presume so.

Mr. ADAMS. In the planning stage they consulted the Commission on all of them.

Mr. JONES. Why should there be any doubt in your mind if you furnish them with figures on which to base their estimates of cost?

Mr. NELSON LEE SMITH. I was not suggesting there was any question, but I just wanted to point out that if projects have been authorized, appropriated for, and constructed under certain assumptions as to power values, then if power revenues return less to the Government than what those estimates were when you gentlemen relied upon them, then, of course, somebody—the Federal Government is not being reimbursed by the power users—and somebody, presumably the general taxpayer, is making up the difference. I thought that was the question some of the members had in mind.

My final comment runs to Chairman Buchanan's comment with reference to the difference of opinion within the Commission on section 10 (f). He stated correctly that he feels that headwater benefits should not run against the Federal Government. I, and I believe the other members of the Commission, think that they should, because: (1) the investment which makes the headwater benefits possible to the Federal Government is privately provided and should in equity be reimbursed; and (2) if those benefits are not so paid for, obviously the cost of power from the Federal projects so benefited will be understated, that is, its over-all economic cost.

Thank you very much.

Mr. BUCHANAN. Do you have any further questions?

Mr. JONES. Yes; we have. Mr. Curran.

Mr. CURRAN. Mr. Buchanan, you mentioned a situation in connection with the Missouri River Basin. The Flood Control Act of 1944 includes two sections that you bring out in your statement. Section 5, as I recall, provides that the Interior Department shall dispose of electric energy developed at projects constructed by the Corps of Engineers with rates approved by the Federal Power Commission. What you bring out is that section 9 (c) also is in that same act. That section relates to the Missouri River Basin program, and it says that the reclamation and power developments to be undertaken by the Secretary of the Interior under the Missouri River Basin plan shall be governed by the Federal reclamation law.

As I understand your statement, the Department of the Interior is now construing section 9 (c) to more or less supersede the specific section 5 of the same act.

In other words, the Department of the Interior is including as power developments undertaken by the Department of the Interior the sale of energy from power developments undertaken by the Corps of Engineers in that basin, and so is not looking to the Federal Power Commission to approve the rates. Is that correct?

Mr. BUCHANAN. That would seem to be the purport of communications we have had with Interior on the subject. As you point out, on pages 16 and 17 of my statement the matter is set forth in some slight detail and indicates that Interior does not recognize that power rates coming from the Missouri Valley dams constructed by the Army engineers is subject to any rate approval of the Federal Power Commission.

I think where the error comes in is in section 9 (c) of the Flood Control Act. That section only refers to construction by Reclama-

tion or by Interior. It has no relationship whatsoever to construction by the Army engineers, which is covered by section 5.

In other words, they are two entirely separate and distinct sections of the Flood Control Act relating to two distinct and entirely separate matters. That is a conflict that we have with Interior today, and today the rates are in effect but without any approval of the Federal Power Commission so far as we know.

Mr. CURRAN. Are Army engineer dams involved thus far in rates?

Mr. BUCHANAN. Yes. Entirely so.

Mr. CURRAN. Which ones?

Mr. BUCHANAN. Mr. McWhorter will answer that.

Mr. MCWHORTER. Fort Peck is the only one completed. Garrison, Oahe, and Fort Randall are all under construction, and Gavins Point is yet to be commenced.

Mr. BUCHANAN. Those are all large dams.

Mr. MCWHORTER. Three of them are extremely large dams and reservoirs; that is, Fort Peck, Oahe, and Garrison.

Mr. JONES. Mr. Buchanan, what would be your opinion of the impairment brought to the Federal Power Commission if all of its administrative duties were vested in the construction agency and thereby leaving it as a judicial or quasi-judicial organization, and that alone?

Mr. BUCHANAN. You mean with reference to rates? You say all of our administrative functions.

Mr. JONES. I mean this: You are now called upon to make studies for the Corps of Engineers?

Mr. BUCHANAN. That is correct.

Mr. JONES. And supply them with engineering data?

Mr. BUCHANAN. That is correct.

Mr. JONES. And comments upon engineering projects?

Mr. BUCHANAN. So far as power is concerned.

Mr. JONES. So far as power is concerned. Why should that authority be vested in the Federal Power Commission rather than in the Corps of Engineers, the Department of the Interior, or any other building agency?

Mr. BUCHANAN. In the first place it is a specialty. I think it is something that is indulged in in private practice as well as in the Government field. When a project is being constructed by private capital they go to consulting engineers or specialists for certain features of the construction. That is the function we perform in this respect. We have a very small staff but it is a very highly skilled and capable staff.

Mr. JONES. Why should it be vested in the Federal Power Commission and not in the agency responsible for carrying out the work and compiling all of the engineering data? In other words, the parent organization that has the responsibility to make all of those reports and do all of the fact finding.

Mr. BUCHANAN. The answer as I would see it is that it is a specialty that goes beyond the normal functions of the other agencies.

Mr. JONES. The Corps of Engineers does not have a sufficient engineering staff to make those studies and reports?

Mr. BUCHANAN. They have, but it is a specialty and they would have to add it to what they have.

Mr. JONES. Does not the Federal Power Commission make surveys and studies of power requirements for various agencies throughout the

country such as the Corps of Engineers and the Department of the Interior and other agencies such as international commissions?

Mr. BUCHANAN. We make power market surveys and we make estimates of future power requirements.

Mr. JONES. Why cannot those studies be made by organizations like the Department of Commerce which is engaged in all the other similar activities?

Mr. ADAMS. May I comment on that?

Mr. JONES. Yes, sir.

Mr. BUCHANAN. Mr. Adams will you give an answer to that.

Mr. ADAMS. I think one of the principal reasons is the fact that the Commission has the information on the power industry and makes that its everyday business in connection with its regular work in the licensing of hydroelectric projects and other regulatory work.

Mr. JONES. You would continue. I do not mean to take away the right to issue a Federal license, but I am talking about the work that goes on in all the areas where the Department of Commerce has an organization set-up and there is a district engineer, and Department of the Interior's offices all over the country, and we are obtaining similar information from all of these agencies. Why do we need special studies such as that? Why can we not conduct them with existing agencies without having duplication in that work?

Mr. ADAMS. I do not believe there is duplication in respect to power. Each one of the several agencies contributes to the planning within its particular field, and power is the particular specialty of the Federal Power Commission.

Mr. JONES. The Corps of Engineers makes a similar study to the one made by the Federal Power Commission with respect to need, does it not?

Mr. ADAMS. Not with respect to power needs, power values, and transmission requirements. All of those matters are referred to the Federal Power Commission is an advisory capacity to the Corps of Engineers. We have complete information on the facilities and operations of every power system in the United States, which is not in their files.

Mr. JONES. Do you comment on designs of projects to meet the need of a given area as proposed by the Corps of Engineers?

Mr. BUCHANAN. Not on the design.

Mr. ADAMS. Only as far as power is concerned.

Mr. JONES. As far as power is concerned?

Mr. ADAMS. Yes; but not with respect to the other features.

Mr. JONES. Do you suggest to the Corps of Engineers the type of generators that will be placed in a generating plant to fit the needs of a particular area?

Mr. ADAMS. Yes, sir. That is as provided in the Flood Control Act of 1944 and other flood-control acts. The Federal Power Commission, jointly with the Chief of Engineers, recommends what power provisions shall be made at each project.

Mr. JONES. Suppose you have a project where you have a 40,000-kilowatt generator and you have some four or five co-ops out here that cannot take that kind of capacity. Do you recognize the needs of those co-ops and tell them what kind of generators to put in the structure to give service to those people?

Mr. ADAMS. We do not design it specifically for any particular individual load, but we endeavor——

Mr. JONES. Why don't you? Don't you want to see the construction is going to meet the needs of the people in the area affected?

Mr. ADAMS. We are trying to make provision in the design of the hydroelectric installation to get the most efficient use of that power site in terms of the utilization of the water-power resources of the river.

Mr. JONES. The need of these projects and the need of the people. Where are we given a proper emphasis on that in the Federal Power Commission? We want these projects built for the use of the people. We are not trying to accomplish an engineering feat out here, because if it did not satisfy the needs of the people then it fails in all of its objectives.

Mr. BUCHANAN. Mr. Jones, I think one of the factors here is in connection with our other work that these matters will come into it in any event. Our study of the electrical industry interconnections and all of that all ties back in. We have to have that information for that purpose. It just carries over into the other work of the Army engineers, and so forth, just as a matter of course. It follows as a matter of course.

Mr. JONES. Let us go back to the original question. These functions are just incidental to the main purpose of the Federal Power Commission.

Mr. BUCHANAN. Yes. That is what I am attempting to say there.

Mr. JONES. Would it be a great injury to the Commission if those powers or those responsibilities were placed on other shoulders?

Mr. BUCHANAN. I did not understand.

Mr. JONES. Would it be an impairment or an injury to the Federal Power Commission if those responsibilities were placed on other shoulders?

Mr. BUCHANAN. Well, I would say we would continue to function in the field as we had the regulatory——

Mr. JONES. But would it injure the rate-making powers that are inherent in the Federal Power Commission if it were to lose those administrative responsibilities?

Mr. BUCHANAN. We would have to have, I think, practically the same personnel for the regulatory approach. Are you speaking now of the licensing of——

Mr. JONES. I am not talking about licensing. I am talking about surveys, reports, and power needs of a given area and all of those things that enter into it. Because what we are hoping some day to do is to get some centralization of authority where we will not have the whole thing spread over 35 agencies of the Government like we have at the present time.

Let me give you an example. From the time a project is authorized until the construction starts we are spending 10½ years on an average in this country. One of the reasons why we are spending so much time is that we have to send reports to every agency of the Government, and it just takes time before they report back to Congress and before we can get a schedule so that we know what we are doing and can authorize this project. It is an endless task. Therefore we want to try to get this authority vested in an agency that can make those comprehensive studies of the project and report as soon as

practicable back to the Legislature so that we can act on the project either one way or the other.

Mr. BUCHANAN. I would answer your question this way: To the extent our regulatory functions other than the licensing functions would not be interfered with, it would be possible to do so, but I think staffwise we would have to keep practically the same staff in the Federal Power Commission.

Mr. Smith would like to comment on that.

Mr. NELSON LEE SMITH. I would like to add to what the chairman said, with which I completely agree, that we recognize the importance of speed and a proper centralization of responsibility, but I think the important thing to recognize is that somebody is going to have to do this work, and that is going to take people.

It is up to you whether you will keep it in the Federal Power Commission, or the Army engineers, or the Department of Commerce, or whatever other agencies may be involved, but I think the view thus far in the Congress has been that because of the Federal Power Commission's expertise in this field, it had a function which it was performing and perhaps it could do it most efficiently. That may or may not be so.

Mr. JONES. What we had in mind, Mr. Smith, was not just transferring it from agency to agency, but what I want to do is to get the related functions to be carried out together. We could swap agencies from now to doomsday and we are not going to accomplish anything or make any corrections in the basic difficulty, but concentration of functions is the thing. This idea of this agency or that agency doing it is not very appealing because you still have the work. We want to expedite it by coordinating the functions that agencies have.

Mr. NELSON LEE SMITH. That is what I was trying to say too. I realize you gain nothing by transferring functions or piling one agency on top of another unless you do get some value in return, and by "you" I mean the Congress in considering what should be done thinks it gets some value out of a review by an agency that has nothing to gain through construction. It is not concerned with the construction or operation of projects but it is primarily and importantly concerned with all aspects of the electric power business, both public and private.

Mr. JONES. Particularly as far as rate making is concerned.

Mr. NELSON LEE SMITH. Particularly as far as everything is concerned: the adequacy of service; the kind of plants you need; the kind of plans you need properly to develop river basins; the kind of interconnection and tie-ups you need to serve the people, and so on.

Mr. JONES. Would you like to comment further?

Mr. BUCHANAN. No; I have no further comment.

Mr. JONES. Mr. McWhorter?

Mr. MCWHORTER. No; except that I suggest the Commission letter of January 22, 1952, be made a part of the record.

Mr. JONES. Without objection, it is so ordered. The material will be placed in the record at the end of today's proceedings. Well, that is all then. Thank you very much, Mr. Chairman and the members of your staff. I am sure there may be other questions that will come to our mind and we shall endeavor to keep in close contact with your organization.

Mr. BUCHANAN. Very well.

FEDERAL POWER COMMISSION,
Washington, January 22, 1952.

Hon. ROBERT E. JONES, JR.,
Chairman, Special Subcommittee to Study Civil Works,
Committee on Public Works, House of Representatives,
Washington, D. C.

DEAR MR. JONES: This letter is in further reply to your letter of October 20, 1951, and its purpose is to supply your subcommittee with the information you have requested, and to answer the following questions appearing in the second paragraph of your letter:

(*a*) If the Commission undertakes surveys or studies without the specific request of another Department, how are these surveys or studies authorized?

(*b*) What is the nature of the flood-control work of the Commission?

The principal statutory authority for the activities of the Federal Power Commission concerning projects for water conservation and development is found in the Federal Power Act of August 26, 1935. By title II of the Public Utility Act, approved August 26, 1935 (49 Stat. 838), the original Federal Water Power Act approved June 10, 1920 (41 Stat. 1063), was amended in certain respects and made part I of the Federal Power Act and parts II and III added to that act. Part II vests in the Commission jurisdiction over interstate transmission of electric energy and public-utility companies engaged therein. Part III relates to such companies and to licensees and embodies the administrative and procedural provisions of the Federal Power Act.

Section 4 (a) of the act authorizes and empowers the Commission—

"To make investigations and to collect and record data concerning the utilization of the water resources of any region to be developed, the water-power industry and its relation to other industries and to interstate or foreign commerce, and concerning the location, capacity, development costs, and relation to markets of power sites, and whether the power from Government dams can be advantageously used by the United States for its public purposes, and what is a fair value of such power, to the extent the Commission may deem necessary or useful for the purposes of this Act."

In the exercise of the authority delegated to the Federal Power Commission by the Congress to issue licenses for hydroelectric projects on streams or other waters over which the Congress has jurisdiction and on lands of the United States, it is necessary that the Commission make investigations of the character authorized by section 4 (a) of the Federal Power Act. In this connection it will be noted that this authority was first vested in the Commission more than 31 years ago, the language of section 4 (a) of the Federal Water Power Act of June 10, 1920, being identical with the corresponding language in the Federal Power Act, as amended, August 26, 1935.

Section 10 (a) of the Federal Power Act, which contains language similar to but not identical with that of section 10 (a) of the Federal Water Power Act of June 10, 1920, is of such importance as bearing upon your inquiry as to justify quoting it in full here:

"SEC. 10. [As amended August 26, 1935.] All licenses issued under this part shall be on the following conditions:

"(a) That the projects adopted, including the maps, plans, and specifications, shall be such as in the judgment of the Commission will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes; and if necessary in order to secure such plan the Commission shall have authority to require the modification of any project and of the plans and specifications of the project works before approval."

It will be observed that the act expressly requires that each licensed project be best adapted, in the judgment of the Commission, to a comprehensive plan for developing the water resources involved for the purposes stated in section 10 (a), including water-power development. Obviously the Commission would not be able to reach such a judgment without first making investigations of the character authorized in section 4 (a) and definitely contemplated in section 10 (a) of the act.

In answer to your first question we state, therefore, that the Commission undertakes and conducts such investigations on its own motion in connection with the exercise of its licensing authority, the investigations having been authorized by the Federal Power Act, and being absolutely necessary to the proper admin-

The licensing of hydroelectric projects is the oldest function of the Commission. As of June 30, 1951, 192 licenses for major hydroelectric projects, and 141 licenses for minor projects with installed capacity of less than 100 horsepower, were in effect. The aggregate installed capacity of these licensed projects is 7,041,000 horsepower. The projects under license at the end of the fiscal year 1951 are designed for ultimate installations totaling 9,932,000 horsepower. In addition to licenses for complete hydroelectric projects, 34 licenses for minor parts of complete projects and 286 licenses for transmission lines across lands of the United States were in effect on June 30, 1951.

Applications filed with the Commission during the fiscal year 1951 contemplate ultimate net installations totaling more than 3,300,000 horsepower, this figure being more than double the comparable figure for similar filings during the fiscal year 1950. At the end of fiscal 1951, 193 applications proposing ultimate installations of more than 6,300,000 horespower were pending before the Commission, and in view of increasing power requirements throughout the country it seems reasonable to assume that the amount of capacity involved in new applications filed each year in the immediate future will continued at a high rate.

The many applications for new hydroelectric projects, each of which must be duly considered and acted upon, afford an idea of the volume of investigatory work which must be done in order that the Commission may reach sound conclusions on the question as to whether the project works proposed in each application are in conformity with the requirements of section 10 (a) of the Federal Power Act.

MULTIPLE-PURPOSE WATER-CONTROL PROJECTS WORK DONE BY THE FEDERAL POWER COMMISSION IN COOPERATION WITH OTHER DEPARTMENTS AND AGENCIES OF THE GOVERNMENT

Under section 4 (c) of the Federal Power Act the Commission is authorized and empowered "To cooperate with the executive departments and other agencies of State or National Governments" in the conduct of investigations made under section 4 (a) of that act, and in the determination of the actual legitimate original cost of and the net investment in licensed projects under section 4 (b) thereof. The Commission cooperates with the States as occasion arises in matters relating to licensed hydroelectric projects, and with the Department of the Army and the Department of the Interior in matters relating to proposed multiple-purpose water-control projects.

The Flod Control Act approved June 28, 1938, and subsequent flood-control and river and harbor acts place upon the Federal Power Commission joint responsibility with the Chief of Engineers, United States Army, for recommendations to the Secretary of the Army with respect to the installation of penstocks or other facilities adapted to possible future use in the development of hydroelectric power at dams authorized by such acts. None of the several acts requires that the Secretary of the Army shall approve such joint recommendations but thus far he has approved them without exception. The installation of penstocks and related power facilities in flood-control dams is recommended by the Federal Power Commission only in cases where the power values thus to be preserved justify such action. The pertinent provisions of the Flood Control Act of June 28, 1938, are quoted in full below:

"SEC. 4. That the following works of improvement for the benefit of navigation and the control of destructive floodwaters and other purposes are hereby adopted and authorized to be prosecuted under the direction of the Secretary of War and Supervision of the Chief of Engineers in accordance with the plans in the respective reports hereinafter designated: *Provided*, That penstocks or other similar facilities adapted to possible future use in the development of hydroelectric power shall be installed in any dam herein authorized when approved by the Secretary of War upon the recommendation of the Chief of Engineers and of the Federal Power Commission."

It is not possible to determine whether the installation of penstocks for the preservation of the power values inherent in a reservoir project proposed by the Corps of Engineers would be justified without making engineering studies of the power potentialities of the project; nor is it possible to determine whether the proposed reservoir would constitute a proper part of a comprehensive plan for development of the water resources of the river basin in which the project is located without making such studies.

RIVER BASIN SURVEYS AND STUDIES

Under the specific and general authority hereinbefore cited, the Commission carried forward during the fiscal year 1951 and the first half of fiscal 1952 its comprehensive surveys of the water-power potentialities of the Nation's major river systems in all parts of the country, and of course contemplates the continuance of these activities. This work includes studies of comprehensive river-basin development, carried on usually in cooperation with other Federal agencies, and investigations of the hydroelectric potentialities of water-control projects proposed for construction by the Corps of Engineers, United States Army, and by the Bureau of Reclamation, Department of the Interior. During fiscal year 1951 the Commission's staff participated in 101 cooperative investigations with the Corps of Engineers and in 50 basin surveys or project investigations with the Bureau of Reclamation.

Multiple-purpose reservoir projects proposed by the Corps of Engineers may be in any section of the country but all such projects proposed by the Bureau of Reclamation are in the Western States.

These surveys and studies are made by the Commission's Bureau of Power, with the assistance of relatively small units consisting almost entirely of employees in the engineering grades stationed in Washington and in the Commission's five regional offices located in New York, Chicago, Atlanta, Fort Worth, and San Francisco.

The Commission's field staff makes cooperative investigations with the field representatives of the Corps of Engineers and the Bureau of Reclamation and consults with and advises the field staffs of those agencies with respect to the power features of reservoir projects in the early planning stages. These cooperative studies involve a determination of the relationship of the proposed multiple-purpose reservoirs to comprehensive plans of river-basin development, and an estimate of the amount and feasibility of the power that could be produced in connection with each project. In the conduct of these investigations full consideration is, of course, given to possible markets for the power as indicated by power-market surveys made by the Commission's staff. Estimates are also made of the value of the power to prospective purchasers. After review in the Washington office, these studies provide a basis for the Commission's comment and recommendations to the Secretary of the Army on project plans as developed at a higher level of authority in the Department of the Army.

The improvement of the rivers and other waterways of the United States for flood control and allied purposes is now a function of the Department of the Army. (See sec. 1 of the Flood Control Act approved June 28, 1938.) In its consideration of multiple-purpose projects proposed by the Corps of Engineers, in which both flood control and power values are involved, the Commission, in determining the power values, must of necessity take cognizance of flood control which generally is the principal purpose served by such reservoir projects. The purpose of the cooperative investigations made by the Corps of Engineers and the Commission with respect to such projects is to insure the preservation of both flood control and power values in a combination that will best serve the public interest. It may be noted further that purposes other than flood control and power may be and generally are served by such projects.

Thus, in answer to your question regarding the nature of the flood-control work of the Commission, it may be stated that the Commission considers flood control only in its relation to power development where both of these functions are involved in multiple-purpose reservoirs proposed for construction by the Department of the Army; and that through the coopertaive efforts of the Commission and the Corps of Engineers the desirable use of these reservoirs for the two purposes is attained.

The Commission's staff also reviews and the Commission comments upon the watershed reports of the Department of Agriculture, 15 such reports having been considered during the fiscal year 1951. These reports deal with watershed improvements, including relatively small headwater reservoirs, and while they are considered carefully it has not been necessary to devote much time to them. The Commission also cooperates with the Federal Security Agency in connection with the pollution abatement activities of the United States Public Health Service.

COST ALLOCATIONS TO POWER DEVELOPMENT AS BASIS FOR SCHEDULES OF RATES AND CHARGES

Another activity relating to multiple-purpose water control projects in which the Commission engages under statutory authority is the allocation to power development of an appropriate part of the capital costs of such projects, the purpose of these allocations being to provide a basis for schedules of rates and charges for the power, it being necessary under existing law, with respect to reservoir projects under the control of the Department of the Army, that rate schedules be confirmed and approved by the Federal Power Commission before becoming effective. All costs incurred specifically for power facilities are, of course, charged directly to power development; and in addition an appropriate share of the costs of joint-use facilities is apportioned to power development.

In this connection it is in order to quote certain pertinent provisions of sections 6 and 7 of the Bonneville Project Act of August 20, 1937 (50 Stat. 731):

"SEC. 6. Schedules of rates and charges for electric energy producted at the Bonneville project and sold to purchasers as in this Act provided shall be prepared by the administrator and become effective upon confirmation and approval thereof by the Federal Power Commission. Subject to confirmation and approval by the Federal Power Commission, such rate schedules may be modified from time to time by the administrator, and shall be fixed and established with a view to encouraging the widest possible diversified use of electric energy * * *."

"SEC. 7. * * * Rate schedules shall be based upon an allocation of costs made by the Federal Power Commission. In computing the cost of electric energy developed from water power created as an incident to and a byproduct of the construction of the Bonneville project, the Federal Power Commission may allocate to the costs of electric facilities such a share of the cost of facilities having joint value for the production of electric energy and other purposes as the power development may fairly bear as compared with such other purposes."

Thus it is seen that with respect to the existing Bonneville project at the head of tidewater on the Columbia River—the lowermost project either existing or prospective on that river—the Federal Power Commission has specific statutory authority regarding allocation of costs and rates to be charged for the power. As to the McNary Dam project, farther upstream on the Columbia River, and certain projects on the lower Snake River, a tributary of the Columbia, the Commission has similar authority under the River and Harbor Act of March 2, 1945 (59 Stat. 10), as related to the Bonneville Project Act. Construction of the McNary Dam was authorized subject to the following proviso: "*Provided*, That surplus electric energy generated at said dam shall be delivered to the Secretary of the Interior for disposition in accordance with existing laws relating to the disposition of power at Bonneville Dam * * *" A proviso of the same import and in almost identical language is applicable to the lower Snake River projects.

Three other large projects on the Columbia River, namely, the Priest Rapids, John Day, and The Dalles projects, were authorized by the Flood Control Act of May 17, 1950 (64 Stat. 163), which makes no provision for cost allocations to power development. The Chief Joseph project, also on the Columbia River, formerly called Foster Creek project, now being constructed by the Corps of Engineers, was authorized by the River and Harbor Act of July 24, 1946 (60 Stat. 641), which makes no provision for an allocation of costs to power development. Inasmuch as all four of these Columbia River projects are under the control of the Department of the Army, the power produced by them will be delivered to the Secretary of the Interior for transmission to markets, and for sale at rates confirmed and approved by the Federal Power Commission under the provisions of Section 5 of the Flood Control Act of December 22, 1944 (58 Stat. 887).

At the existing Fort Peck project on the Missouri River in Montana this Commission is responsible for making an allocation of costs to power development; and schedules of rates and charges for the sale of Fort Peck power do not become effective until confirmed and approved by this Commission. The provisions of section 5 of the Fort Peck Act relating to rates, and of section 6 of that act relating to cost allocation, are identical with the corresponding provisions of sections 6 and 7, respectively, of the Bonneville Act. We invite attention to the fact, however, that three very large reservoir projects, known as the Garrison, Oahe, and Fort Randall projects, are now being constructed by the Corps of Engineers on the Missouri River downstream from the Fort Peck Dam

under the Flood Control Act of December 22, 1944, which makes no provision for cost allocations to power development.

It should be observed further that numerous reservoir projects involving power values in various sections of the country, other than the projects in the Columbia and Missouri Basins referred to above, have been constructed or authorized for construction by the Department of the Army, under acts of Congress which make no provision for cost allocations to power development.

As to multiple-purpose reservoir projects built by the two principal construction agencies, namely, the Corps of Engineers and the Bureau of Reclamation, the Federal Power Commission has authority to make cost allocations to power at certain projects, the Department of the Interior has corresponding authority with respect to certain other projects, and no agency of the United States has any specific authority to make such allocations at a majority of the reservoir projects authorized for construction by the Congress.

It seems obvious that a well-defined congressional policy with respect to the important matters of cost allocation and the fixing and supervision of rates charged for power produced at Federal reservoir projects, regardless of by whom the projects are constructed, would be in the public interest. These are interrelated matters inasmuch as the rates at which the power is sold must produce revenue sufficient at least to assure recovery by the United States of that part of the total project cost allocated to power development (see sec. 7 of the Bonneville Act).

Sincerely yours,

THOMAS C. BUCHANAN, *Chairman.*

(Whereupon, at 12:15 p. m. the subcommittee adjourned until 10 a. m., Tuesday, May 6, 1952.)

STUDY OF CIVIL WORKS

TUESDAY, MAY 6, 1952

COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE TO STUDY CIVIL WORKS,
Washington, D. C.

The special subcommittee met, pursuant to adjournment, at 10:05 a. m. in room 1302, New House Office Building, Hon. Henry D. Larcade, Jr., presiding.

Charles D. Curran, staff director.

Mr. LARCADE. The committee will come to order. The first witness this morning is Mr. Michael W. Straus, Commissioner of the Bureau of Reclamation. We have here a prepared statement.

Will you read your statement, Mr. Straus?

STATEMENTS OF MICHAEL W. STRAUS, COMMISSIONER, BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR; AND GEORGE E. TOMLINSON, ASSISTANT DIRECTOR OF PROJECT PLANNING, BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR

Mr. STRAUS. Thank you, Mr. Chairman.

I am happy to report to the committee this morning. I reported to them in informal preliminary sessions and I am now glad to have an opportunity to present this in the open sessions. It gives us an opportunity to try to explain our operations. This happens to be our fiftieth anniversary in Reclamation, the golden jubilee, and we invite your most searching inspection of our record.

The reclamation program has grown from a modest start to a complex activity involving expenditures of from $200 to $300 million annually. In the early days—that means immediately after the passage of the reclamation law in 1902—the Secretary of the Interior had virtually complete control of the program. Upon his determination that a proposed irrigation development was practical, the project could be constructed with money from the reclamation fund. It was just that simple and direct.

By contrast, projects are authorized for construction today only after, and in addition to a favorable finding by the Secretary, the critical review of a myriad of Federal and State agencies, review by the Bureau of the Budget, and direct action by the Congress of the United States. Congress then appropriates construction funds after further inquiry and justification, and construction is undertaken when a final definite plan report has been approved and repayment commitments obtained.

This evolution from the simple to the complex has been gradual over the past 50 years, aided and abetted by the ever-growing volume of reclamation law, now comprising well over 1,000 pages.

Actually, the reclamation law is now one complete book, a sizeable supplement, and another supplement is being added as Congress passes new reclamation laws.

Perhaps the most convenient way to give you a picture of our operations is to trace the development of a Reclamation project from sagebrush to sugar beets. A Reclamation project starts with a field investigation. Broad authority to initiate and carry out investigations is contained in reclamation laws. In fact, it is a directive to the Secretary of the Interior "to make examinations and surveys for, and to locate" works for the development of irrigation and the river basin resources of the West and report thereon to the Congress. Investigations and planning are financed through funds appropriated by the Congress, in some cases supplemented by contributions from States, municipalities, and other interests. Where local interests specifically request investigations, appropriations act language requires them to contribute at least one-half the investigations' costs. All investigations' costs, by the way, are charged to the project and are reimbursable like the other project costs when the project is eventually constructed.

The first step in the normal investigation procedure is to prepare a reconnaissance report to determine if further, more detailed studies are justified. If it appears that development with favorable local support may be practicable, a detailed project investigation is undertaken.

The detailed project investigations comprise the project planning stage and cover all phases of development, including water supply—very important in reclamation—land classification, marketing studies, designs and cost estimates. and engineering and economic feasibility determinations. The studies are completed in sufficient detail to establish that the project has engineering feasibility, is economically justified, that anticipated project revenues will meet all reimbursable costs, and that there is sufficient local support to assure success. During these investigaitons, the Bureau works closely with related State agencies and with other Federal agencies. It arranges, where necessary, for other agencies to participate, as, for instance, for the Corps of Engineers to furnish flood-damage and flood-control benefit evaluations and for the Fish and Wildlife Service to appraise and report on fish and wildlife aspects. Extensive discussions are held with prospective water users and other local interests and, where desirable, public hearings are held.

An investigation activity separate from that just described is that related to formulating comprehensive river basin development plans. Reclamation has completed or has under way such comprehensive basin investigations in every major river basin of the West. The individual project plans developed are, of course, consistent with the broader basin-wide plans.

Upon completion of the field investigations, the regional director prepares his proposed report. The proposed report is circulated to the field offices of other Federal agencies and to State and local interests for comment. On receipt of comments from this referral, the

regional director prepares his final report, which is then transmitted to the Commissioner of Reclamation.

The Commissioner prepares his proposed report, which is normally adopted by the Secretary as his proposed report, and is transmitted in accordance with the Flood Control Act of 1944 to the affected States and to the Secretary of the Army for review and comment, and to the head of the agency exercising administration over the wildlife resources of the State in compliance with the provisions of the act of August 14, 1946. It is also transmitted to other Federal agencies in accordance with procedures of the Federal Interagency River Basin Committee.

In other words, it is made completely and thoroughly public.

After all these comments are received, the final report of the Secretary is prepared and transmitted to the President, through the Bureau of the Budget. On receipt of the advice of the Bureau of the Budget on the relation of the project to the President's program, two possible courses are open to the Secretary.

If the Secretary finds that the project meets certain requirements of law, namely, that it has engineering feasibility and that the returnable costs, together with the allocations to nonreimbursable purposes such as flood control, equal the total project costs, and if the affected States or the Secretary of the Army have not objected to the project, then the Secretary may submit to the Congress a report qualifying the project under the formula laid down by Congress and thereby authorizing the project. Such a report may be accepted or rejected by the Congress. Upon transmission of the report to the Congress and after transmission, the Secretary, through the Bureau of the Budget, may request Congress to appropriate for construction.

If the project does not meet the requirements of section 9 (a) of the Reclamation Act of 1939, if either an affected State or the Secretary of the Army objects, if some special provision requiring congresssional authorization is desired, or if for any other reason the Secretary desires, authorization of the project by the Congress, the report is transmitted to the Speaker of the House and the President of the Senate, where it is referred to the appropriate committee, which may be the Committee on Interior and Insular Affairs, and it may be this committee before which I am appearing. Specific authorization legislation is introduced, hearings are held, and the project authorized by specific act of Congress.

This completes the normal cycle encompassing project authorization. Major reclamation developments, such as the Missouri Basin project and the middle Rio Grande project, have been directly authorized by Congress through inclusion in omnibus rivers and harbors and flood control acts. Other projects, such as the Hungry Horse Dam and Reservoir, have been authorized by special legislation without all the procedural background of detailed reports. In rarer instances, minor undertakings have in Congress' discretion been authorized by appropriation acts.

Before turning to the construction phase of a reclamation project, I would like to touch briefly upon report requirements and upon factors determining project selection.

A project report sets forth essentially that information necessary to establish the engineering and economic feasibility of the develop-

ment plan, to show its relation to other phases of basin development, and to indicate the support of local interests. Under the heading of "Engineering feasibility" such items as the types of physical structures and their estimated cost by detailed breakdown, the adequacy of water supply, and the suitability of lands for irrigation are presented.

The economic analysis made consists of two parts. The first, required by reclamation law, consists of an allocation of project costs among the purposes served and a showing that the anticipated project revenues will return all reimbursable costs. The second, although not required by reclamation law, is the showing of estimated benefits and costs, and is made as a matter of Bureau policy. Thus, a reclamation project must meet two standards of economic feasibility: The estimated benefits must exceed the estimated costs and the anticipated project revenues must provide for return of all reimbursable costs.

Requirements of law and policy in respect to repayment of reclamation projects are as follows:

(1) Costs of certain services and functions are provided, as a matter of national policy, by the Federal Government on a nonreimbursable basis. Under present law these functions include flood control, navigation, and the preservation and propagation of fish and wildlife. The determination of the amount of the nonreimbursable cost assigned is based on the allocation of cost among the various project functions.

(2) Irrigation costs are returned without interest, usually over a period of 40 years or longer. In some cases water is delivered to the water users on a water service or annual charge basis.

(3) Power costs are returned generally within 50 years with 3 percent interest.

(4) Domestic and industrial water supply costs are returned with interest, generally over a 50-year period. (The law makes the charging of interest discretionary on the part of the Secretary, but as a matter of policy, interest at the prevailing cost of money to the Government is charged on municipal and industrial water supply investment.)

Under reclamation law and policy, the revenues from power and domestic and industrial water supply, including the interest component, may be used to help repay irrigation costs. It is reclamation policy further to pool project-wide, all projected revenues and reimbursable costs to provide for uniform power rates and to facilitate irrigation development. This basin account principle is now operating in the Central Valley and Missouri River Basin projects, and recommendations have been made to extend it to the Columbia and Colorado River Basins.

The final major finding presented in a project report is that the water users desire and will support the development. This means their acceptance of the requirements of reclamation law in respect to acreage limitation, antispeculation, and repayment of costs and that they are willing to enter into firm contracts embracing these requirements.

Having met these exacting standards and requirements, which, more so than any other Federal water resource development activity, protect the Federal investment, and having been authorized, a reclamation

project is eligible to receive funds through congressional appropriation and enter the construction stage.

The Bureau's construction program, as has been reported to the Congress, has been retarded considerably by criteria imposed, because of the emergency situation and international conflicts, on new starts by the President, the Bureau of the Budget, and the Department of the Interior, and I believe the Congress. The President's current official budget estimate is thus a conservative program geared to the Nation's current economy and over-all needs, rather than to the straight reclamation needs and demands for water and power.

During the appropriation hearings the Bureau of Reclamation consistently follows a policy of voluntarily disclosing to the appropriation committees any significant changes or adjustments in its program that have developed since the previous hearings. These disclosures include among other things, changes in the economic justification of projects, new estimates of construction costs, and new schedules of construction. In this way, Congress is enabled to keep abreast of the changes which take place in the reclamation program from time to time.

Prior to the initiation of construction of a new project which provides irrigation services, a definite commitment on the part of the water users is obtained. Although reclamation law requires that such a contract be obtained only before water is delivered, in order to make certain that the water is actually desired by the local people and to protect the Government in the repayment negotiations, the general rule of reclamation is that the commitment to repayment and to compliance with the antispeculation provisions of reclamation law must be obtained prior to breaking ground.

Since 1949 the Bureau of Reclamation, by internal administrative action, has required approval by the Commissioner of a detailed report setting forth the definite plan of each new project before construction is undertaken. This is done in order to make certain that the planning has been properly done; that choices between alternatives have been resolved; and to reassure ourselves that the project is justified and will produce the desired benefits.

Upon completion of construction the project is ready for operation and maintenance. If it involves reclamation of private lands, a repayment contract would normally have been consummated with a representative district organization prior to construction. If public lands are involved, a representative district is formed and a contract executed during the initial years, or development period, of project operation. On public lands, farm units are staked out and settled by public drawing. Techanical assistance is offered to new settlers through cooperation with State colleges and agencies of the Department of Agriculture.

A basic policy is to encourage district organizations to assume responsibility for operation and maintenance of project works wherever possible. All operation and maintenance costs are assumed by the districts in addition to their repayment of capital costs. Upon completion of repayment, the entire irrigation works, with the exception of storage reservoirs, are turned over to the water users. In the case of storage reservoirs, transfer of ownership requires a specific act of Congress.

With a reclamation project in operation, the Federal Government realizes from then on a solid return on its investment. Project

revenues from power, irrigation, and domestic and industrial water supply repay all reimbursable costs. In addition, the increase in income tax from the enlarged tax base created by new farms and new business and industrial activities in reclamation areas is a significant contribution to the National Treasury. And this repayment goes on indefinitely—it has no termination point.

That is the mechanics of the ground rules that Congress laid down for the operation of the reclamation program. I am interested always in looking over the development of reclamation history to observe how many projects were authorized by this committee before which I am now appearing. Really a great many projects that have gone forward in reclamation have been primarily authorized by this committee. In requesting me to appear here this morning the committee indicated through your staff director, Charley Curran, that there were certain matters in which the committee is particularly interested and which I will attempt to cover briefly.

Foremost, was our experience in cost estimating and in the variations between estimated costs at the time of project authorization and the actual or curent estimates of costs of construction. This is a subject which must be analyzed on the basis of figures. Unfortunately, however, bare figures without adequate explanation of their true meaning can be grossly misleading. They can be, and have been, misinterpreted. They can be, and have been, distorted. It is through such misinterpretation and distortion that the Bureau of Reclamation, as well as the Corps of Engineers, has received much of the adverse criticism directed at mislabeled cost estimating inadequacies.

Reclamation's costs have frequently exceeded the original estimates. Let me state that positively: Reclamation's costs have frequently exceeded the original estimates; our experiences have followed quite closely those of other Federal agencies and private industry. Work being completed today generally costs something more than twice the 1940 cost estimates of the same program.

I want to interpolate there. We are before this committee to say that these early estimated costs have increased. The estimates on works were frequently provided to Congress back before the Second World War, or even earlier than that, based on costs at that time. Costs are a great deal higher now than those estimates submitted to the Congress. It costs more today to build a dam, or a canal, or a skyscraper, or a chicken coop, than it did according to the estimates made in the thirties or before 1940. Unhappily it seems to be costing more every month.

Mr. ANGELL. Commissioner, is that not due pretty largely to the 50-cent dollar we have?

Mr. STRAUS. Well, inasmuch as the fact is that the costs are measured in the current dollar and the dollar brings less labor and material, which makes it cost more than it used to, that is absolutely true, Mr. Angell.

Considering the entire reclamation program, with the exception of the Missouri River Basin project, which is explained in detail later, the costs estimated at the time of authorization totaled $1,308,000,000, as compared with $2,690,000,000 as of today. This represents an increase of about 106 percent. Two items account for 86 percent, the bulk of the increase: Changes in plan amounting to $706,000,000, or 54 percent, and price changes amounting to $416,000,000, or 32 percent.

I want to ask Mr. Tomlinson if he will present to the chairman at this time our cost index, which I think would be of interest to the committee. That is a chart that shows in types of construction the increase in costs since 1940. Then we will put it in the record if it is acceptable to the chairman.

Mr. LARCADE. Do you want to present it first?

Mr. STRAUS. We will just hand it to you first.

Mr. LARCADE. Let him hand it to the reporter and without objection it will be included in the record at this point.

Mr. STRAUS. All right. Thank you, sir.

(The document referred to is as follows:)

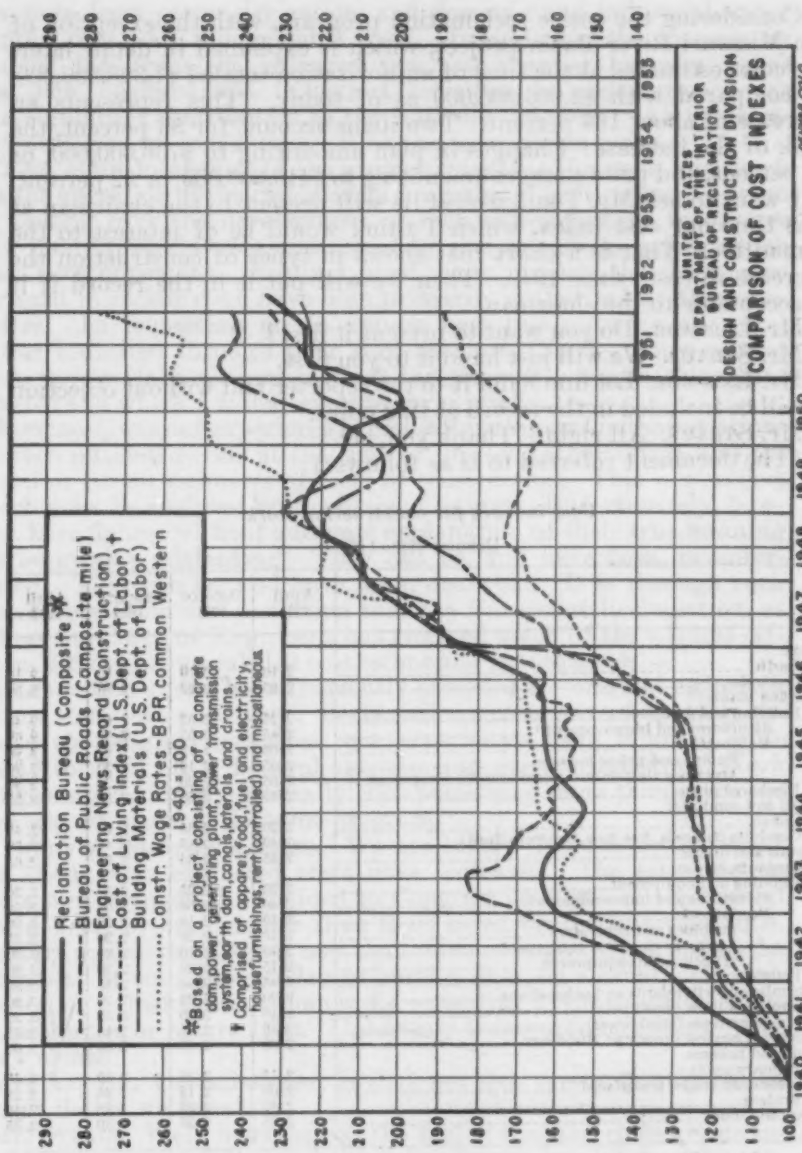
Cost indexes for construction work

[January 1940=1.00]

	April 1951	October 1951	January 1952	April 1952
Dams:				
Earth	2.10	2.10	2.10	2.15
Concrete	2.25	2.25	2.25	2.30
Pumping plants:				
Building and equipment	2.25	2.35	2.40	2.40
Structures and improvement [1]	2.45	2.55	2.55	2.60
Equipment	2.05	2.15	2.20	2.20
Pumps and prime movers	2.05	2.10	2.20	2.20
Accessory electric and miscellaneous equipment	2.05	2.20	2.20	2.20
Discharge pipes	2.45	2.50	2.55	2.55
Canals and conduits:				
Canals	2.20	2.35	2.40	2.45
Conduits (tunnels, free flow, concrete lined)	2.40	2.45	2.45	2.50
Laterals and drains	2.45	2.55	2.65	2.65
Powerplants, hydro:				
Building and equipment	2.20	2.25	2.30	2.30
Structures and improvements [1]	2.40	2.50	2.55	2.60
Equipment	2.10	2.10	2.20	2.20
Turbines and generators	2.10	2.10	2.20	2.25
Accessory electrical equipment	2.10	2.10	2.20	2.20
Miscellaneous equipment	2.15	2.20	2.20	2.20
Penstocks	2.45	2.50	2.55	2.55
Transmission switchyards and substations	2.20	2.20	2.20	2.20
Transmission lines (wood pole)	2.10	2.20	2.25	2.25
Transmission lines (steel tower)	2.15	2.15	2.15	2.15
Permanent general property: Buildings	2.60	2.60	2.60	2.60
Roads and bridges:				
Primary roads	2.15	2.25	2.30	2.35
Secondary roads, unsurfaced	2.00	2.15	2.25	2.25
Bridges	2.40	2.45	2.45	2.45
Composite index	2.25	2.25	2.30	2.35

NOTE.—The above cost indexes for construction work are based on the combined costs of material and labor furnished by the contractor and material and labor furnished by the Government.

[1] Indexes for structures and improvements on pumping plants and powerplants are based on a reinforced-concrete structure.


COMPARISON OF COST INDEXES
DESIGN AND CONSTRUCTION DIVISION
BUREAU OF RECLAMATION
DEPARTMENT OF THE INTERIOR
UNITED STATES
Reclamation Bureau (Composite)*
Bureau of Public Roads (Composite mile)
Engineering News Record (Construction)
Cost of Living Index (U.S. Dept. of Labor) †
Building Materials (U.S. Dept. of Labor)
Constr. Wage Rates - BPR common Western
1940 = 100
*Based on a project consisting of a concrete dam, power generating plant, power transmission system, earth dam, canals, laterals and drains.
† Comprised of apparel, food, fuel and electricity, house furnishings, rent (controlled) and miscellaneous.

Mr. STRAUS. The largest item, "Changes in Plan," results from several factors. Of the total of $706,000,000 in this category, approximately $500,000,000 represents changes or extension of projects authorized or reauthorized by the Congress or congressional authorized finding of feasibility under reclamation law. For instance, additions to the Central Valley project authorized by the Congress subsequent to the initial authorization of the project account for $240,000,000 of the increase. A further significant portion of the $706,000,000, about $100,000,000 represents construction of facilities provided for in the

original authorization but not covered in the original cost estimate. An example of this is found at Davis Dam where the original authorization provided for the ultimate installation of a 225,000-kilowatt power plant, but the cost estimate covered only the installation of a 170,000-kilowatt plant. Thus, only about $100,000,000 or approximately 8 percent, of the cost estimate at authorization, represents changes in plan due to various administrative decisions.

The average increase of 32 percent due to price changes needs little explanation other than recognition that construction on several of our large projects such as the All-American Canal, Columbia Basin, and Central Valley was initiated in the early thirties and that many authorizations were in the late thirties and early forties when price levels were considerably lower than at present. Construction costs have risen steadily over the past several years in line with general price rises affecting practically all activities and commodities.

I wish I were able to tell the committee, or I would be even more appreciative if the committee were able to tell me what the trend of construction costs is going to be in the next 5 years. I do not know.

The remaining 20 percent of increase represents the accumulation of a number of items, none large in itself, as follows: Structural and engineering modifications, 3 percent; revisions to meet local needs, 3 percent; unforeseen conditions, 4 percent; inadequacies in planning, 6 percent; national emergency, 1 percent; and all others, 3 percent.

Further, these increases, in large part, occurred on projects such as Hungry Horse, Central Valley, and Columbia Basin which were authorized by special acts of the Congress or by the President and in the absence of the regular type of report upon which normal reclamation authorizations are based.

For the great majority of reclamation projects authorized in accordance with normal procedure, analysis will show that the current estimates of construction costs, when adjusted for increases due to changes in prices and later authorized additions to or changes in plan, are quite in line with the cost estimates presented at time of authorization.

As I stated before, special explanation of the cost estimate figures for the Missouri River Basin project are in order. At the time of authorization, Reclamation's portion was estimated to cost $840,000,000, based on 1940 or prior estimates. The present estimated cost is $3,140,000,000. This large increase is due principally to the incompleteness of data on which the cost estimates were based at the time of the original authorization. Senate Document 191, Seventy-eighth Congress, second session upon which the original authorization was based, outlined a general basin-wide plan of development requiring a 40- or 50-year construction program to accomplish. It neither intended, nor did it imply, that the estimated costs were firm. In fact, it did just the opposite, as evidenced by specific language in the report. This is a quotation of Senate Document 191:

> The plans on which the estimates are based were necessarily of a preliminary nature. At many of the dam sites, exploratory work has been carried far enough to obtain dependable basic data. At other sites, further exploratory work must be undertaken before details of the structures can be determined and better estimates made. All the works proposed in the report are of the same general type which the Bureau of Reclamation has been constructing in the West since 1902, and no novel or unprecedented problems are involved. All cost estimates

are tentative, and are subject to revisions in the light of further information which must be developed by exploratory work and detailed design studies before construction is undertaken.

That is the end of the quote from the document in which Congress authorized the project. I thought it would be helpful to the committee to know that Congress is considering this project did recognize the basic facts and also the incompleteness of all the basic data on which Congress at that time acted, which I think was in 1944.

Presumably the project was recommended by this committee and authorized by the Congress in the light of and with the full knowledge of these facts and with the understanding that further and complete investigations would be performed subsequent to authorization and before construction of the individual units was undertaken.

Further, but a small portion of the Missouri River Basin project is under construction. Only 22 units out of over 200 are in the 1953 construction program and represent only $400,000,000 total completed costs of the currently estimated $3,140,000,000 of over-all costs. It is quite probable that many of the units originally contemplated will not be constructed under the high price levels that are controlling today. Before new units are undertaken, they are thoroughly reviewed and economic justification reestablished under existing conditions as to costs and benefits. Thus, comparison of original cost estimates with current estimates for the Missouri River Basin project has little value or real meaning.

I might interpolate here that the Congres has not told me yet, or told General Pick yet, on what schedule we are supposed to complete the Missouri Basin project which we are charged with carrying on for the Congress. They have not instructed us as to whether we are supposed to do that in 10 years or in one century. The way we are actually instructed is each year by the amount of funds that the Congress makes available for the schedule on which the work will go forward. So it is annually controlled by the Congress through the appropriation procedure both to the Bureau of Reclamation and to the Corps of Engineers. There is no over-all policy instruction of when we are supposed to get the work done, but from my point of view and for my money as a taxpayer also, the sooner we get it done the better it will be for the valley.

Mr. SMITH. Mr. Commissioner, in all practical reality that is the only way the Congress can act on a program so vast, is it not, in the light of what it is able to appropriate each year to the program?

Mr. STRAUS. I think that is right and we have so accepted it. We would be aided if we were instructed as to national policy, as to what the broad approach of the Congress was. That is, whether they wanted us to finish this in 25 years, which might be a reasonable period, or whether they would want us to finish it in a century, which other people might think is a reasonable period.

There is a great deal of disagreement as to what is a reasonable over-all period. Rather than rely on our own judgment we would like to have that policy laid down, but I think what you say, sir, is correct. Congress does set the pace annually in the appropriation bill. It writes the velocity of the program for the coming 12 months in the new appropriation bill, and the velocity is always changed not solely by the needs of the Missouri Valley, but by domestic and world

events completely beyond the control of either General Pick or the Commissioner of Reclamation.

Mr. LARCADE. Will you permit me to make an observation at this point too in connection with the statement that you just made, Mr. Straus? In view of the terrible floods that we have had in the Missouri River Basin it seems like there are some differences of opinion now as to whether the Pick-Sloan plan should be undertaken or whether or not there should be some changes made in the whole program. The matter has become quite controversial and I know that many of the members of the committee have received much correspondence, and the newspapers have printed many articles in that respect.

Mr. STRAUS. Yes, sir. And of course the program in the Missouri Basin authorized projects, if further completed at this time, would have given some further flood control. If it had been less completed than it is, which is not very much already, there would have been even less flood control.

With your permission, Mr. Chairman, I want to elaborate very briefly on that at the conclusion of this statement with some figures, because I think it is an important item.

Mr. LARCADE. Without objection, we would be glad to have you do that.

Mr. MACK. How much money has been requested of Congress for the coming year for the Missouri Valley?

Mr. STRAUS. For the Bureau of Reclamation appropriation, which is aside from but is used with the Army appropriation for the Missouri Valley—Mr. Tomlinson and myself both remember the figure that was asked in the President's budget for the Missouri Basin section of the reclamation program only to be about $46,000,000 for the fiscal year commencing next July 1.

Mr. MACK. Do you know how much the Army has requested?

Mr. STRAUS. I do not recall that figure, but I would be glad to look it up and insert it in the record at this time. It is somewhere in that range. I think it may be a little larger. I will look that up and put it in.

(The information requested is as follows:)

The President's budget estimate for fiscal year 1953 included $117,200,000 for work by the Corps of Engineers in the Mississippi River Basin.

Mr. STRAUS. Much has been said about the Bureau of Reclamation's unstarted backlog of authorized construction. The Bureau is now working on 43 projects (including the Missouri River Basin project, rehabilitation and betterment program and the water conservation and utilization program, each as one project), with a remaining cost estimated at $4,066,0000,000, and there are 9 additional authorized projects on which construction has not yet been started, with an estimated cost of $261,000,000. The largest single project in this list—by far the largest—is the Missouri River Basin project, composed of over 200 units which are scheduled to be built over a long period of years.

Note there, the best I could tell you on that is a long period of years. I cannot tell you how many.

The remaining cost of this project is estimated to be about $2,800,000,000.

The job of water resources development has become increasingly complex, with more and more emphasis on the interrelationships of various functions and the benefits of providing for the multiple-purpose use of structures. This trend has necessarily brought about the interweaving of the programs of several Federal agencies. Various means of coordinating these programs from direct agency to agency contcats to group activity of such bodies as the Federal Interagency River Basin Committee have been and are being employed.

The Bureau of Reclamation and the Corps of Engineers have a particularly difficult task of coordination. Operating in the same river basins of the West, their authorities and responsibilities overlap, and in many cases their basic laws and policies diverge. Under these circumstances, it is not strange that there have been differences between the agencies. I am convinced that sincere efforts have been made consistently and are being made at the present time to resolve these differences. Agreements have been consummated in the Columbia, Middle Rio Grande, and Missouri Basins, and those projects are testimony to the success of these efforts. In other areas, notably the Central Valley, conflicts have arisen that are still unresloved.

In most part these conflicts can be traced directly to different or overlapping basic law and responsibilities. In all areas, however, where the Bureau and the Corps are carrying on parallel studies, investigations, and activities, there is unavoidably a substantial measure of some duplication, particularly as to administration and overhead. But we keep that to a minimum and we exchange basic data between the agencies.

Another item that this subcommittee asked me to include is public criticism or reclamation activities. Any agency with a program as large and diverse and controversial, as that of reclamation must expect a certain amount of criticism. We get it. I will not deny that we have had our share. I do, however, want to point out that there are two particular sources from which criticism or reclamation's operations originate.

As the world's largest power generator and transmitter and as the marketing agent for excess power produced at most Federal plants, the Department of the Interior, including the Bureau of Reclamation, is a favorite target of the private utilities whose aim is to monopolize power distribution from Federal projects and to circumvent the Federal public power policy. The other major source of criticism is from the large landholders and commercialized agricultural interests of the West who are opposed to the 160-acre limitation and antispeculation provisions of reclamation law. The Bureau of Reclamation is a strong supporter of long-established Federal policy, established by the Congress in these two issues, and bears the brunt of attack from those who are primarily opposed to Federal policy rather than to the Bureau of Reclamation. Thus, much of the criticism of Reclamation must, in all justice, be discounted when the source of criticism is considered.

Reclamation is an old hand at being investigated. It has probably undergone more investigations, congressional and otherwise, than any similar agency of the Federal Government. It has not suffered from having lived so much of its life in a goldfish bowl. We welcome such interest of Congress.

I might say we benefit by it because many of these investigations clarify some point of national policy for us. We are proud that the net result of all this attention has been the endorsement and continued support of the reclamation program by the Congress.

Much has been accomplished by Reclamation during its first half century. Nearly 6,000,000 acres of desert and semiarid land have been furnished water to produce annual crop incomes of more than one-half billion dollars to approximately 125,000 owners of family-sized farms. Approximately 4,250,000 kilowatts of hydroelectric generating capacity have been installed and 1,000,000 kilowatts more are now being installed, making Reclamation the largest producer and transmitter of power in the world. More than 100 dams and reservoirs have been completed, with a total capacity of nearly 75,000,000 acre-feet for irrigation, flood control, navigation, recreation, fish and wildlife, municipal and industrial water, power, and other useful purposes.

That storage space in operation today makes the Bureau of Reclamation the largest individual conservator and distributor of water that there is.

Despite such a record, however, Reclamation has not been able to meet the needs for water and power in the area it serves. The needs of the West continue to present a real challenge to the Interior Department, to the Bureau of Reclamation, and to the Congress.

Now, Mr. Chairman, in view of the fact that so much of reclamation has been made possible by this committee, just to make the material convenient to the committee I ask permission to leave with the committee for its records a number of documents and reports that I think are helpful in getting the whole story before you. They are The Drought in Southwestern United States, which was published in October 1951; the Bureau of Reclamation Manual, which is an extensive document. There are only selections of it here. That is our Bible by which we must proceed. It is based on the laws passed by the Congress. A volume on Water Studies is included in there as well as ones on Basin and Project Development. Benefits and Costs, and Cost Allocation Procedures. Also the Reclamation Project Data Book; the vital statistics and documents of the projects, many of which are authorized by this committee, that are now operating.

Also the Federal Reclamation Laws, Annotated, with the 1946 supplement. I weighed this once. It is about 3½ pounds in total, I think. Much of it was provided to the Bureau of Reclamation by this committee and included as part of the reclamation law.

Also the Bureau of Reclamation Project Feasibilities and Authorizations, this being a compilation of various enactments passed by the Congress by which we abide; and I want the committee to have it all in convenient form.

I want to answer all questions and give all information, but I want first——

Mr. LARCADE. Let me ask you this: In view of the fact that these documents are so voluminous that they cannot be included in the hearings, we would like to have them filed in the archives of the committee for the use of the committee and its staff.

Mr. STRAUS. Yes, sir. And where we have a duplicate copy of these, if more are desired by any member of the committee, we will

provide them. I did not expect I could get them reprinted for free by the committee as part of the record.

I want to respond to the question, Mr. Chairman, about the relationship of current floods and past floods in the Missouri Basin to the Missouri Basin program, sometimes called the Pick-Sloan program, and what, if anything, that program has done to alleviate them, what it can be expected to do, and when it can be expected to do it, which I think are very pertinent questions that ought to be asked at this time.

I am going to describe here only the reclamation section of that program, recognizing that a very great and worth while section is being carried on by the Corps of Army Engineers generally under the direction of this committee also, this committee having authorized the whole project, and knowing that the committee is familiar with or will receive reports from General Pick and the Corps of Army Engineers on their section.

I am addressing myself only to Reclamation's responsibilities.

There are a great number of projects authorized to Reclamation in addition to the Army engineers in the Missouri River Basin. What those projects will do for flood alleviation is directly established by whether they are completed; whether the dams are closed; whether they are under construction; or whether they are mere authorizations not reflected in any actual physical work on the system.

As of April 1—these figures are as of April 1, which is 1 month ago—the Bureau of Reclamation has completed in the Missouri Basin watershed 32 dams that have a total capacity of 5,356,430 acre-feet. In the recent high water and the continuing high water—there is still high water out there in the basin in many areas—their full capacity was available where needed on any tributary or upstream action of the system to hold water out of that flood. We could hold that much water out of that flood on completed dams. We did; 5,000,000 acre-feet of water is a lot of water to hold out of a flood and the country got that much benefit from the completed projects.

Five million three hundred fifty-six thousand acre-feet, however, despite the fact that it is a lot of water, is a small amount of water compared with the recent volume in the Missouri River Basin.

There were as of April 1, and there are today, under construction seven additional Bureau of Reclamation projects that are not yet closed reservoirs and closed dams, that will provide upon completion and closure, some of which will be closed in the next 12 months, an additional 4,271,600 acre-feet of reservoir space. That much additional space will be available to catch and hold the flood on the Reclamation section of the Missouri Basin program. That totals virtually 10,000,000 acre-feet that will be available to catch and hold floods some place on the system on completion of all the work that is now under construction. Ten million acre-feet is also a lot of water, but it is not so much water when you compare it with the amount that was running in the Missouri Basin system this year, and may run again.

Mr. LARCADE. Those are all Bureau of Reclamation dams.

Mr. STRAUS. Those are Bureau of Reclamation only. They do not include very fine projects of major flood-control service such as Garrison and Fort Randall on the main stream that are under construction by the able Corps of Army Engineers.

In addition, still in the Bureau of Reclamation section only there are authorized but not started approximately 100 structures which, when financed, constructed, completed and closed as reservoirs would provide in the Bureau of Reclamation section of the plan alone an additional 25,000,000 acre-feet which, you see, is far more than anything constructed, completed, or under construction now. That is almost two and a half times as much.

So the story in the Missouri Basin as of today is essentially that the projects that have been completed are working. The projects that have not been completed or started are not working. No floods are held or caught by proposed or projected projects. I do not think they ever will, whether they are Army or Reclamation projects. That again comes back to our national policy decision which is being formulated annually and revised annually on what schedule we are supposed to complete these projects, or that it is the national desire to complete, or we are able to complete the Missouri Basin projects.

Mr. ANGELL. Mr. Commissioner, have you any information to give to the committee as to the amount under the Army dams that will control floods in the area?

Mr. STRAUS. Yes. I do not have it in figures with me now, but we have that information. It is public information as to what is constructed and what is under construction, and when it will be completed. It is very substantial. This is true, Mr. Angell, that the Army projects are much larger main-stream projects than the Bureau's. They are well into construction because they are larger and more extensive and more elaborate downstream main-stream projects than the Bureau's. We both started at the same time, but the Bureau was naturally able to complete its smaller projects before the Army completed any of its larger projects.

But we will have those figures with the capacity of Fort Randall and all the rest of those main-stream dams. That is public information and we will be glad to file it at this point in the record.

Mr. ANGELL. I wish you would.

(The information requested is as follows:)

Capacities of Army reservoirs in the Missouri River Basin

	Total capacity, acre-feet	Flood control capacity, acre-feet
Completed (3)	19,940,000	3,987,000
Under construction (6)	53,761,000	8,761,600
Authorized but not started (8)	6,713,000	4,660,700
Total (17)	80,414,000	17,409,300

Mr. ANGELL. Is the controlled capacity larger or smaller than the amount under your division?

Mr. STRAUS. Well, of course, the Army has flood control capacity works that are not storage reservoirs, but they are flood-control works, such as levees and other items like that. I think you would find that the total authorized by the Army on the Missouri River system is larger. That would include, and properly should include, a great reservoir that is already working there, built by the Army engineers, namely, the Fort Peck Reservoir, high on the Missouri, built by the Army engi-

neers some years ago under the public works program prior to the authorization of the Pick-Sloan plan, but which is incorporated in that Pick-Sloan plan.

Mr. LARCADE. At this time, if you do not mind, we would like to have the staff director of the committee interrogate you. After he shall have completed his interrogation the members of the committee will also be permitted to interrogate you.

Mr. STRAUS. I will be glad to, sir.

Mr. LARCADE. At this time we will have Mr. Curran interrogate you.

Mr. CURRAN. Mr. Straus, among the elements in which the subcommittee is most interested are the conflicts and overlaps in law and the relationship among the various agencies. The present Missouri River situation and that existing last summer would furnish many examples that can be used as illustration.

Last fall the Bureau of Reclamation requested funds for initiating the Kirwin, Webster and Glen Elder projects. In February a press release came to the attention of this subcommittee stating that Kirwin Dam was being undertaken by the Bureau of Reclamation as an emergency flood control structure.

Before the Senate Appropriations Committee on September 24, 1951, General Pick made some remarks which I would like to read. I quote his statement:

> Now funds are being asked for these structures to build them for flood control.

He is referring to the three dams under the Bureau of Reclamation.

> A situation is being created—and, Mr. Chairman, I should like to be quizzed on this very thoroughly because I think it is a very important point. In the 1936 act the Corps of Engineers was charged with the responsibility of providing flood control. The Congress has not changed that authority. Flood control, in my opinion, is one of the most important considerations that we have because we are committing ourselves to the people to provide protection for them against ravishing floods.
>
> In my opinion that protection when provided should be assured the people, and every precaution should be taken to insure that they get the protection as provided.
>
> There is one agency of Government responsible for flood control. There is springing up a policy in obtaining appropriations to divide that responsibility. Gentlemen, if you divide the responsibility for controlling floods in a river basin like this and a storm falls there that precipitates a flood such as we had this spring in Kansas—

that is July 1951—

> and there is any divided responsibility as to how to operate those structures in a basin of that size, you are placing in jeopardy the people downstream from those structures, because divided responsibility is weak.

That ends General Pick's quotation. Since he made that statement we have had this later flood. You mentioned the amount of flood control provided by Bureau of Reclamation projects. Can you make any statement on General Pick's testimony? Particularly, how are your works coordinated with the flood-control works of the Corps of Engineers?

Mr. STRAUS. Yes; and I assume it would be pertinent to relate it to the Solomon River and to Kirwin Dam, that being the actual tributary that is under discussion in the Missouri Basin program.

It is true, as General Pick said, that the Kirwin Dam was authorized by the Congress and it was so true that the Congress placed the Kirwin Dam under construction by making an appropriation to it primarily for flood-control purposes at the close of the last session. The contract has been let and the Kirwin Dam is under construction at the present time. The Kirwin Dam is in Kansas on the north fork of the Solomon River, that flows into the Kansas River, that flows into the Missouri River. It is located in western Kansas.

The dam was authorized by the Congress to be constructed in the 1944 Flood Control Act, which authorized the Pick-Sloan plan—the coordinated act—in 1944. It was one of those that had not been placed in construction in the intervening 8 years until Congress decided to do so last fall.

I believe that Congress acted, and I think they stated they acted, in recognition of the fact that this would provide some flood control on the Kansas River system, which had been a bad flooder and is a bad flooder. There has not been any conflict in operation between the Bureau of Reclamation and the Army engineers on the Kansas River system.

We already have another dam on another tributary on the Smoky Hill River, known as the Cedar Bluff Dam, which caught and held its full capacity out of last year's Kansas River flood. Congress instructed that Kirwin be constructed, and financed its construction, and stated that it initially should be undertaken at this time for flood-control purposes only. It does not provide any flood control today, and it is not yet completed. The construction contract is let on it, however.

The sense of the congressional instruction, as I read it, in the 1944 act, is that when opportunity comes later, secondarily, after providing flood control initially, we shall make it a multiple-purpose dam and the floodwater we catch and hold there shall in the dry season be placed upon the land for irrigation purposes, so that it shall also become an irrigation purpose.

I do not recognize any conflict between Kirwin Dam and the Army flood-control operations. Our people are working in close coordination, and that means something more than just mouthing the word "coordination" with the Army during high water. Our regional directors and our project superintendents went to the Army and said, "Now, is there anything you like us to do?" The Army said there were some things they would like us to do. We did them. I do not think there is a conflict there.

The point General Pick makes is that in 1936 the general authority for flood control was given to the Corps of Army Engineers; and in 1944, without repealing that general authority, the Congress further authorized a number of specific projects that should be carried on under that general authority and, in addition thereto, told the Bureau of Reclamation that they were supposed to build some for flood-control purposes.

Mr Tomlinson reminds me that all space allocated for flood control on the river system will be used for flood-control purposes in accord with such regulations as the Chief of Engineers issues, which space would specifically include the flood-control space in Kirwin Dam on the Solomon River of the Kansas system of the Missouri system.

Mr. SMITH. Mr. Commissioner was the Kirwin Dam authorized in 1936 as part of a flood-control act?

Mr. STRAUS. The Kirwin Dam was authorized in the Flood Control Act of 1944. The Flood Control Act of 1944 for the Missouri Basin area embraced the authorization of the Pick-Sloan plan. It was at that time that the Kirwin Dam was authorized by this committee.

Mr. SMITH. I was interested in what reference you made about 1936.

Mr. STRAUS. I said that the point General Pick made, and I believe it was the point that Charley Curran cited or quoted him as making then, was that it was the general authority for flood control granted by the Congress to the Corps of Engineers in the Flood Control Act of 1936. Congress extended it in actually authorizing projects to the Army engineers and also told the Bureau of Reclamation to do some of it in the 1944 Flood Control Act for the Missouri Basin.

Mr. CURRAN. Mr. Straus, the point is, it is approximately 8 years since the 1944 Flood Control Act became law. The two agencies worked together in developing the Missouri River project then, and it is now that General Pick raises the question, notwithstanding the provision in the Flood Control Act of 1944. I think it is section 7 that says in effect that for multiple-purpose projects in which flood control is involved the Corps of Engineers will be responsible for the coordinating of the flood-control operation. In the quotation I read General Pick mentions that if you divide the responsibility for controlling floods in a river basin like this one you will be placing in jeopardy the people downstream from those structures.

This brings up the question of divided responsibility. The question is, Is it at all true that there are any projects that the Bureau of Reclamation is operating for flood control that are independent of the Corps of Engineers?

Mr. STRAUS. Yes. Let me first say that I do not consider it a divided authority in operation. It may be any agency Congress sees fit to have do the contracting job of building the structures, but inasmuch as all space in any of these reservoirs allocated to flood control is concerned, it is and will be used for flood-control operation in accordance with the regulations of the Chief of Engineers. I do not feel there is a divided authority even if the Bureau of Reclamation opens and closes the gate and performs the ministerial function of opening and closing a dam, or Kirwin Dam when completed, according to the instruction or the regulation of the Chief of Engineers—we might actually pull the gate open or shut it down, but the operation would be according to the regulation of the Chief of Engineers.

In further answer to your question which is bringing out an important point that there are projects of the Bureau of Reclamation which provide flood-control service, although they are built for conservation purposes and no nonreimbursable allocation was made in the financing of them for flood-control purposes. Nevertheless, in the matter of intelligent public service we operate them for flood control, even though it is at the expense of the water users and power users who have to pay for them under reclamation law and are not relieved of any of the cost of them because they serve a flood-control purpose.

An example of that, and possibly the most spectacular example, is the Grand Coulee Dam that Mr. Angell is so familiar with out on the Columbia River, which has not one cent of allocation in its financing for flood-control purposes—not one cent of reimbursable funds provided for it for flood-control purposes. It does have a million dollars of nonreimbursable allocation for navigation, but nothing for flood control. It was authorized as a power and irrigation project to be repaid, with no other free money. However, because it was the only major project on the river completed and able to give some flood-control benefits, regardless of the fact that it was not designed or authorized or financed on that basis, we have been in the last 2 years and right at the present time today voluntarily operating it so as to provide some flood-control service. This is extra service from a structure not built for that purpose on the Columbia River.

We get some criticism for that. People who are primarily interested in the water for irrigation purposes, or in the water for power purposes, have some doubts as to whether we should make this great structure serve still a third, a very worth-while purpose which was not stipulated by the Congress.

Mr. ANGELL. Mr. Commissioner, it is true, is it not, that the multiple uses of the dams for flood control and power clash?

Mr. STRAUS. Yes, sir. It is true from the economic point of view of the power user who has to pay the power rate, and for the irrigator who has to pay for the water. It is not mandatory that they always clash. Frequently they do not clash. We try to operate Grand Coulee so there is no clash.

Mr. ANGELL. One fundamental purpose of a power project is to keep the dam full so that we may have water in the dry season. However, for flood control the purpose is to keep it empty so that when we have floods we may fill it and by that method control the flood.

Mr. STRAUS. That is correct, Congressman Angell. It is absolutely correct; and it is because of that that there is this procedure of allocating space for conservation purposes or for flood-control purposes in a dam. However, if we are skillful enough, and I think with the aid of the Army engineers and all the local interests and others, in the last couple of years we have been skillful enough so to operate the reservoir that we could let it down somewhat prior to the expected crest of the runoff of the glaciers behind the high mountains back of Grand Coulee Dam and then catch and top that high-water runoff when it comes and still end up the season with a full reservoir for irrigation and navigation and power generation.

If we are able to do that, we hit the jackpot.

Mr. ANGELL. It is true, is it not, that there was some criticism lodged against the operation of Grand Coulee in that it was claimed that water should have been let out that was not let out, and when the floods came on us then we were not able to control those floods because we did not have the available space behind the dam?

Mr. STRAUS. That is right. In this job you get criticism from both sides. If you let the water out and pass up getting the kilowatts and irrigation later on, you get criticism on that score. If you do not and you protect the irrigation and power and do not empty the reservoir to catch the flood you get criticism on the other score. We operate it in close harmony with the Corps of Engineers, the Bonneville

Power Administration, and the Northwest power pool, with all of the public and private agencies trying to get the country the greatest benefit out of it possible. Frequently we do not please everybody, Mr. Angell.

Mr. ANGELL. It is true, however, is it not, Mr. Commissioner, that in the Columbia River area there is a very fine spirit of cooperation both in public and private agencies with reference to operation and control on the Columbia River?

Mr. STRAUS. That is true, and I think it is improving. It is a complex subject and has improved steadily with further understanding of it. We must recognize that people have specific interests. Some people are interested primarily in fish; some people are interested primarily in navigation; and some people are interested primarily in flood control. Some people are interested primarily in water for irrigation, and some are interested primarily in kilowatts. They are cooperating, but they all have their primary interest and you, the Congress and this committee, and certainly myself, are going to hear from any of them who do not think their particular interest is properly recognized.

Mr. WOOD. Mr. Chairman, may I inquire?

Mr. SMITH. Dr. Wood.

Mr. WOOD. Mr. Straus, concerning the temporary power shortage last September at Grand Coulee, is it your opinion that that temporary shortage was in any way contributed to by the fact that you were at that time filling the irrigation dam during the period of lowest water instead of letting it run off to create power?

Mr. STRAUS. Mr. Wood, the answer broadly, I think, could be "yes." We let it run off to create power—all that we could let out we used to create power. But then we used some of that power for the purpose of pumping up the water 309 feet from Lake Roosevelt behind the Grand Coulee Dam into the balancing reservoir, so that we would have it up there ready for irrigation this spring.

Mr. WOOD. Yes; but the point I am getting at is, was that a wise move during the period of lowest water when the aluminum plants were temporarily shutting down part of their facilities when as a point of fact the heavy rain season came approximately somewhere within a week or two weeks, that is, a week or 10 days from the time that the power shortage order was promulgated? I understand you did not have anything to do with it, nor your Department, but are those not the facts?

Mr. STRAUS. Basically those are the facts, but get all the facts before you. I did have something to do with it. I ran the pumps and used the power to fill the reservoir, not full, but to a certain extent, oh, less than half full, so as to have the water up there for irrigation this summer.

Mr. WOOD. Yes; but that is not the point I am trying to make. There was one of the heaviest runoffs, or one of the heaviest downpours of rain in that section that we have had this last winter, the heaviest snowfall for the last 30 years in that section. With a heavy rainfall and a heavy snowfall would it not be presumed that you could expect in the long season between September and June, which about marks the end of the runoff of mountain water—would it not be presumed you would have had plenty of opportunity to fill that irrigation reservoir?

Mr. STRAUS. No, sir. Quite the opposite, sir. That water gets down to Grand Coulee in mid-summer. That is high-water period on the Grand Coulee Dam section of the Columbia River. We will need the water in the balancing reservoir before midsummer. According to the hydrology of the river we felt that the time we used the power to pump up to the minimum need in the reservoir was really the best time we would ever have an opportunity to use that power.

We will assume that the power demands, or we did assume, and I think correctly, that the power demands this coming summer and last fall will be even heavier than they were last fall. There will even be a greater demand for that power for industry.

Mr. WOOD. On the other hand, you have more dams producing power now.

Mr. STRAUS. No. There are more that are going to be there, but they will not be producing this summer and early fall. There are some. I think Hungry Horse is the first one that is coming on, and that will be late fall. So we figured that we used that power at the best time to put the minimum load, or the minimum subtraction from industrial use, in those few days last fall. We stopped it just as soon as we got our minimum water requirement met. That water is today being used and is the water that we pumped up last fall. This summer and this month it is going to be used for the first irrigation of the first 65,000 acres of the Columbia Basin 1,000,000-acre irrigation project. That water and that power, as we read the law—and I feel quite assured on it—is dedicated primarily and initially for that purpose of irrigation. Congress says that is the first use we shall make of it. That is why the project was built. We felt if we had done anything else we not only would have been performing in a wasteful and uneconomic manner, but we also felt that we would have been operating clearly outside of the law and the policy laid down by the Congress, because the project—the water and power works are primarily dedicated to provide water for irrigation.

In this case you have to use kilowatts for irrigation because you have to lift the water up.

Mr. WOOD. At that time, of course, you did not know that a particularly heavy rainfall was coming, and you were going to have the heavy snow we have had up there.

Mr. STRAUS. That is true, and that has not all reached the reservoir yet. But our operation since that time, Dr. Wood, has been that every time there is enough water so that it would spill and could not be used for generation, we have pumped a little bit more up into the reservoir that otherwise would have wasted into the ocean. Where it is not spilling we have fed all the kilowatts on to the northwest grid.

Mr. WOOD. Well, I commend you very highly for that. That is a very wise move.

I wonder if I might pass on now to another question. I was here the other day when the Federal Power Commission was asked some questions and I was wondering if you could explain to the committee the difference between the estimated costs on any dam site construction and the incremental costs. In the first place, has the method of computing incremental costs been authorized by Congress?

Mr. STRAUS. I interpret it, and I think correctly, but correct me if I am wrong, that in this case you mean by the term "incremental

costs" actual costs as differentiated from estimated costs. You mean what was actually spent before the thing was completed.

Mr. WOOD. Well, something like this is in my mind: Let us take it before the incremental method was used. You know, of course, that the estimated cost is a legal method passed by Congress. It simply states in figures according to the law that a dam before it is built must be stated to Congress what it is going to cost and some method must be shown to Congress whereby those costs are justified. That, of course, is a time-honored principle and I think we all understand it.

Within the last year or two, as I understand it, a new method has been evolved whereby part of the costs are allocated to other things for which perhaps the dam was primarily constructed. I refer more particularly, to be frank, to the Hells Canyon Dam. For instance, the out-and-out cost of, the estimated cost of, the dam is given at a certain figure. Later on there came the principle of allocating these costs incrementally to other projects, such as flood control, and a certain proportion of those costs were allocated to flood control. I believe it is a fact that the Snake River never floods. I mean, the water causing the floods in the lower Columbia merely comes in from the Salmon River and I think the Clearwater. I think that is a pretty well-established fact. We are having a very slight flood regionally now, but it is rather localized.

The point I am raising is that if the allocation to the incremental costs of flood control is so much to a thing that really does not exist at that particular dam, and then we have another allocation of navigation, I have not been able to satisfy myself that the Hells Canyon Dam would have any incremental excuse for navigation. There is not particularly any navigation on the Snake River above Lewiston. It seems to me that is in a way an evasion of the real estimated cost factor.

The third thing is that a certain amount is estimated to wildlife and recreation facilities. I think almost anyone would agree in place of being benefited it would be a detriment to wildlife and recreational facilities.

The point I am getting at really is this: By the allocation of those costs to flood control, for instance, it is extremely difficult, and even if there were any flood control it would be extremely difficult to allocate any costs to that. Does it not fog up the issue as to what the dam is really going to cost by bringing in the new method of computing the cost by allocation to things that might or might not exist, and does it not cloud the issue in bringing the bill before Congress with a certain estimated cost if these costs are going to be allocated in that method over and against the method which has been used from the beginning of irrigation dams, which is just the direct cost of the dam and the business method of bringing that in one lump sum with a straight business computation showing how it is going to be paid for by the proceeds of the dam?

Mr. STRAUS. I want to be responsive to that, Dr. Wood, and in that it covers several questions, if you will bear with me I will try to be responsive to it.

No, 1, you state truthfully and accurately concerning the flood-control damage in the Snake River Valley; while there have been floods there, they have been minor and it is not a great flood danger area. However, there have been some floods.

Mr. WOOD. So far, Commissioner, is it not a fact that if the dam were constructed that upriver the danger of floods would rather definitely increase in the Snake River Valley?

Mr. STRAUS. No, sir. I do not think it would.

Mr. WOOD. It provides an obstacle to the runoff of the water.

Mr. STRAUS. It would be a controlled obstacle where you could release the water through the dam according to the requirements at any time.

Mr. WOOD. Would you not have to keep a certain head of water in order to generate your power so as to pay for the dam?

Mr. STRAUS. Yes, but you could release the water at any time and if so much of it got in there that it is certain to go over the top, or certain to back up into the upstream sections of the Snake River——

Mr. WOOD. That is controlled, is it not?

Mr. STRAUS. Now, regarding the flood-control purpose of Hells Canyon Dam or the flood control of the Snake River, the primary flood-control benefit is not in the Snake River Valley, but down in the main stream of the Columbia after the Snake has entered the Columbia in the Portland area. If you can control and regulate the level of the water of the Columbia by keeping some of the Snake River out of it when Portland is flooding, it is just as good for flood control as if you keep the Columbia River water out of it, because they are all commingled water drops when they get down there. It does most positively serve a flood-control purpose there.

Now, to some other phases of your question, Does it confuse the issue instead of just saying the dam costs so much and it is going to be repaid? I do not think it does confuse the issue because no matter what purpose part of the project and part of the funds that are used for the project are allocated to, the total cost is still there and is still known. That is what you start with.

In a perfectly businesslike manner we say this is what the Hells Canyon project would cost all told—dam, powerhouse, and all the project. That is something over $350,000,000, as you are aware from the other hearings that you sat through. So that is not confused or distorted at all by any allocation process. The total cost is known and completely disclosed, and Congress very properly insists on it being disclosed. You could not get any further unless you did have that total cost as a beginning.

When you get to the allocation of that total cost between various purposes, you sometimes get into an area of disagreement. That is, whether of this total cost so much should be for flood control, so much should be nonreimbursable, so much should be for power which is fully reimbursable with 3-percent interest, and so much should be for navigation, which is nonreimbursable, and so much should be for fish and wildlife, which is generally nonreimbursable, and how you break down the burden of that total cost in the use of the structure and put a dollar tag on these various functions. In doing that you refer to the incremental method, which is correct, sir. That is one method that is used in figuring these various benefits about which there may be disagreement according to the particular interest group.

For instance, the fish and wildlife enthusiasts are likely to feel that it should be made to serve more of a fish and wildlife purpose than perhaps the navigation enthusiasts think. It is of great import to

everybody; whether costs are by the incremental method allocated to functions which the Congress has declared reimbursable, which means somebody is going to pay for them, either a water or power user; Or, whether it is nonreimbursable and paid for by the National Treasury as a national benefit. I think we proceed correctly. We secure from the most competent agency, its competency being judged by the jurisdiction given it by the Congress, as to the value of certain functions, and the allocation of funds to serve that benefit.

You cite flood control or navigation. We proceed under the law to get flood-control benefits from the Corps of Engineers, which is the agency that the Congress through this committee establishes and you make that a primary function of theirs. We consult them and use their figures. I do not challenge their figures on it. I think they are a competent source of information. If it is an allocation by the incremental method to fish and wildlife, we are likely to get a little variety of opinions. Perhaps one from the Fish and Wildlife Service, which is a Federal agency. We may get a little different one from the particular State Game and Fish Commission, or the conservation commission involved. We frequently get a still different one from an organization such as the Izaak Walton League. But we follow the law and get the allocation from the agency that has the authority and the function established by the Congress generally through this committee.

Mr. WOOD. The eventual effect, however, of the incremental method has this difference from the old one: If Hells Canyon Dam were authorized to be paid for by the production of power, it would be paid for by the production of power eventually, but in the case of the incremental method a reasonable large proportion of the cost is shunted right out of the pockets of the general taxpayers of America. There is that difference, is there not?

Mr. STRAUS. That is basically quite correct, Mr. Congressman. If Hells Canyon project is authorized as a single-purpose project you have power generation alone with no flood-control benefit, no navigation benefit, and no fish and wildlife benefit, and no irrigation benefit recognized by the authorization language, and the total cost of it would have to be met by power sales so as to repay it within 50 years, plus 3-percent interest. It is before the Congress, however, as a multiple-purpose project with recognition of the flood-control benefits and other items as stipulated by the Corps of Engineers and as calculated by the Corps of Engineers in accord with the policy laid down by the Congress, primarily through this committee, that declared flood control to be a general benefit to the Nation as a whole, to be paid for from the general revenues of the Nation.

Mr. WOOD. Through taxes.

Mr. STRAUS. Through taxes.

Mr. WOOD. Is there any present statutory authority for the incremental method of fixing the costs or fixing the allocation of costs to a dam?

Mr. STRAUS. There is a statutory authority.

Mr. WOOD. Pardon me. I would like to add to that.

Mr. STRAUS. Excuse me.

Mr. WOOD. Or does this act creating Hells Canyon Dam, is that the beginning of the recognition, if the act is passed by Congress, of the incremental method of estimating the costs of a dam?

Mr. STRAUS. No, sir. The Hells Canyon Dam does not create any new policy or establish any new precedent. If Hells Canyon is authorized in the form that it is now before the Congress it will be in accord with already established policy and already established precedent by the Congress, and law already established. It is true, as you point out, that allocations are made to nonreimbursable purposes in Hells Canyon. That is also done——

Mr. WOOD. That part of it is new?

Mr. STRAUS. No, sir. That is not new. That is well-established policy. It is practiced in the Missouri Basin. It is practiced in California. It is practiced under the laws and policies laid down by Congress that recognized the desirability of a multiple-purpose project and permits nonreimbursable allocations following consultation by the Chief of Engineers to flood-control or navigation projects. That has been done in many instances.

It was done also in the case of Hoover Dam where there is a $25,000,000 allocation to flood control. It is true in the case of Grand Coulee Dam, and it is the same in Hells Canyon.

The language of the bill before the other committee recognizes the financial assistance of irrigation from power revenues. That is done in Grand Coulee very extensively. That is the way Grand Coulee was conceived by the Congress, and that is the way it has been built, and that is the way it has been administered.

It is proposed to do that also in the case of Hells Canyon Dam. To my way of thinking we try to follow the policy as it evolves and changes. There is no new policy in Hells Canyon Dam.

Mr. WOOD. Does not the incremental method make the rate fixing difficult for the power sold? I understand, Mr. Commissioner, that the rate to be fixed for Hells Canyon power is to be largely filtered into the grid, that is, the Bonneville power grid. I do not see exactly how the rate can be fixed for a kilowatt of power at Hells Canyon if it is all mixed up in the Bonneville grid.

Mr. STRAUS. Well it can be, and this is the way it would be done. Of course, it has to be done according to whatever act is passed, but according to the precedents that have been established by innumerable acts passed by the Congress and this committee, we must make allocations, as you point out, to these various purposes—nonreimbursable or reimbursable.

Mr. WOOD. That would reduce the cost per kilowatt.

Mr. STRAUS. Definitely. If a navigation or flood-control benefit is recognized or established by the Corps of Engineers in the case of Hells Canyon Dam, it already having been established by the Congress as nonreimbursable, that section of the project that is built to serve those purposes is nonreimbursable, and therefore it does not have to be paid by the principal repayment feature, which is power or kilowatts.

Now in fixing the rates we still have to get the rates high enough so that under the laws as passed by Congress we can show the project reimbursing and paying back within the amortization period provided, with the interest rate provided on power to be within the criterion laid down by the Congress. That, of course, controls the rate.

Mr. WOOD. To do that you would have to take the rates at the grid, that is, at the Bonneville power grid, and take a general average and

99217—52—pt. 3——7

apply that average to the repayment of costs of Hells Canyon. Is that the method?

Mr. STRAUS. No. We would start a little at the other end. We could justify Hells Canyon project and get sufficient repayment primarily out of the kilowatts to meet the requirements of the reclamation law and all the laws passed by the Congress, which is just the way we do it.

However, after we have done that we have to get a rate that meets that requirement of the Congress. Then after that, from the point of view of Bonneville we have to see whether they want any power at that rate. They naturally, and properly, want a rate as low as possible.

It happens that in the case of Hells Canyon Dam because of the magic of Hells Canyon and the Snake River and the topography of the water there, we can meet the power requirements and repayment requirements with interest and still have a rate that is acceptable to Bonneville, and actually would provide the Bonneville grid with the greatest number of the lowest cost units that are sadly needed by the area and the grid, of any possibility that they foresee on the river system at the present time.

Mr. WOOD. Would it be equally attractive to Bonneville without the incremental cost that you would have to charge? Would it be equally attractive? I believe it would not be as attractive to the Bonneville grid if you are not able to allocate part of the cost of the dam to these other features, would it?

Mr. STRAUS. No. I do not like to testify for my sister agency, Bonneville, but I think I can respond fully to that question. The answer is "No." It would not be as attractive to Bonneville for the reason that they would have to realize from power revenues—they would have to pay for Hells Canyon power and some equivalent to the flood control allocation, which would be very large, that would be reflected in the power rate when they get Hells Canyon power on the line. Thereby it would increase the power rate Bonneville would have to charge and thereby would be very undesirable from the point of view of the power consumers of the Northwest as well as the agency that sells the power.

Mr. WOOD. Thank you very much, Mr. Commissioner.

Mr. MACK. Mr. Commissioner, we of the Pacific Northwest are greatly interested in the Columbia Basin project because of the impact it will have upon the economy and prosperity of the States of Oregon, Washington, and Idaho. What is the size of the Columbia Basin project?

Mr. STRAUS. The Columbia Basin project being the original Grand Coulee project in the Columbia Basin, and that is what you and I, I think, call the Columbia Basin project——

Mr. MACK. Yes.

Mr. STRAUS. It is the largest single plant for power production in the world. It has just a few kilowatts short of 2 million name-plate capacity.

Mr. MACK. I am interested in the acreage in the project.

Mr. STRAUS. I am going to deal with that too. I want to give you the whole story. It is just short of 2 million capacity generation. We actually operate it at above name-plate capacity, at 5 percent or so above name-plate capacity to try to meet the kilowatt demand.

The acreage is approximately 1 million acres of irrigated land. Eventual irrigation will be approximately 1 million acres. The water and storage is there now. The canals are there and this summer it will irrigate the first 66,000 of the 1 million acres. Congressman Mack, the first water day is the last day of this month of May, which is a date that the community and the State has been looking forward to for 15 to 20 years. I hope you are present to observe that.

Mr. MACK. How many additional acres will be added to this project each succeeding year?

Mr. STRAUS. We are shooting for a schedule of between 40,000 and 70,000 additional acres each succeeding year until the entire million is irrigated. Whether we are able to keep that schedule will depend on funds and wars and other items.

Mr. MACK. My understanding is that this Columbia Basin is to be divided into farms of 40 to 160 acres each. How many farm families will this land accommodate, that is, this 1 million acres of which you spoke?

Mr. STRAUS. I think speaking from memory, it is approximately 13,000 farm families. In addition thereto there will be in this desert area springing up a number of new service communities, that is, towns there with garages and grocery stores, and so forth.

Mr. MACK. In other words, figuring four to the family, these 13,000 farms will provide farm homes for about 50,000 farm people?

Mr. STRAUS. On the farms.

Mr. MACK. Is it true also that to supply the people on the farms with goods and services it will require approximately two people for each person on the farms.

Mr. STRAUS. Just a fraction over that I believe, Congressman Mack, according to our experience on other projects, when you consider transportation, stores, doctors, garages, undertakers, and all the other features of a community.

Mr. SMITH. Do they have undertakers out there?

Mr. STRAUS. They do.

Mr. MACK. In other words, when this entire project is completed in 15 years we will have in eastern Washington a population of about 150,000 new and additional people.

Mr. STRAUS. That is correct, sir. Another way of stating it is that you will have established an agricultural community that is approximately equivalent in area to the State of Delaware.

Mr. MACK. What is the need and justification for these reclamation projects? I ask that question because one of our very able Congressmen, Mr. Whitten of Mississippi the other day on the floor of the House of Representatives said that the topsoil of 2,000 Mississippi Valley acres are being washed out to sea each 24 hours.

I do not know whether that is correct or not, but if it is correct we are losing hundreds of thousands of acres, or even several million acres of topsoil every year.

Mr. STRAUS. We are losing a terrific amount of topsoil each year. The Reclamation Bureau is most unhappy about that. We prevent it in areas where our projects are, or mostly prevent it. Most of this soil is in areas where we have no projects whatsoever. We hope some steps are taken to stop this soil erosion, and we support all such steps.

However, to answer the first part of your question as to what is the

need for it, in my somewhat hectic life I do not have to worry much about that. The Bureau of Reclamation, in the 20 years that I have been familiar with it, has never been able to come anywhere near meeting the demands of the communities of the West for water, irrigated land or kilowatts. In the Columbia Basin public lands, first we eliminate everybody who is not eligible to preference by law, which leaves only veterans with qualifications. Then, after all those eliminations we still have 10 and sometimes 15 qualified veteran applications for every farm unit. The only way of meeting it is to go to the good old glass bowl drawings.

Mr. MACK. Another reason is that the population of the country is growing very rapidly, I believe about 2 million a year.

Mr. STRAUS. That is true, sir.

Mr. MACK. There will be a greater need for fiber and food that must be produced by the farmers.

Mr. STRAUS. That is true for the country as a whole, but if you are going to go down to areas where we operate population growth is about double the national average in Oregon, Washington, California, and Arizona.

Mr. MACK. In the Missouri Basin you said that the amount of money requested by the Bureau of Reclamation for the reclaiming of land there was about $53,000,000 for the coming year. You thought the Army engineers had requested a similar amount, which would mean a total about $100,000,000 for the coming year. On that basis it would take you at least 40 to 50 years to complete the entire project.

Mr. STRAUS. No, sir. We would never do it. We would never be able to complete the entire project in 40 to 50 years at that rate. If we are going to complete the entire Pick-Sloan plan it will be nearer a century. Your great grandchildren and mine will be around for the completion, but we will not at that rate.

Mr. MACK. If all of these projects in the Missouri Valley were completed do you think complete protection against floods would be provided the lower valley?

Mr. STRAUS. Yes, sir. I think that the completion of the physical works provided for in the approved Pick-Sloan plan would give satisfactory protection. You might have one or two creeks flooding, but as far as the main system is concerned it would give complete protection under any known or forecasted thousand-year flood possibility.

Mr. MACK. Does this $3,100,000,000 estimate you give for the entire project include the works of the Agriculture Department which they plan for the upstream areas?

Mr. STRAUS. No, sir. That does not. That includes only the reclamation section of the authorized Pick-Sloan plan. There has been proposed, and there is before Congress now, an additional group of works generally of a farm-unit type and smaller variety individually, but in total very large, by the Department of Agriculture. That was brought forward about 4 or 5 years after the original authorization.

Mr. MACK. Mr. Commissioner, I notice that every time we have a major flood in the Missouri or the Columbia Valley that the President has a tendency to pick up the flood, figuratively, and lay it on the doorstep of the Republican Party or on the doorstep of the Congress. Who, if anyone, is responsible for the failure to take care of these floods? Is it the executive branch or the Congress, that is to blame

or is it due to the fact that all this multiplicity of projects would cost so many billions of dollars and make it impossible to carry it out?

Mr. STRAUS. Is that a nice question to ask? I will respond this way, Mr. Mack: The floods will continue until the works to prevent them are in place, and until a national policy is established, resolved, and carried out—not just declared but carried out by the building of physical works under a national policy to control these floods.

Mr. MACK. There is no protection then against these floods for the immediate years ahead? It is a long-range project.

Mr. STRAUS. I never saw a flood stopped or even bothered by passing an authorization bill. The water keeps running downhill until the works are built to catch and to hold the flood.

Mr. MACK. As to releasing this water from the Grand Coulee Dam in order to lessen the impact of floods downstream, who has the decision as to when and if that water will be released?

Mr. STRAUS. It is actually done currently by an agreement between the Corps of Engineers, the Bureau of Reclamation, and the Northwest power pool working in cooperation. If there had been a nonreimbursable allocation for flood control to Grand Coulee Dam the Army would stipulate it, but at the present time, because there is no nonreimbursable allocation to Grand Coulee for flood control, it is done by agreement of the three agencies.

Mr. MACK. Do you think it would be more effective if one agency of the Federal Government had the authority to make that decision?

Mr. STRAUS. I think, sir, you raise a point I am a little bit of a monomaniac on. I think there must be approved by Congress fully implemented and operational plans for these whole river systems. Whether you create a water master or who does it or how you do it, there are a lot of different views on it, but I think when we built great projects like Bonneville Dam, or McNary Dam, or Grand Coulee Dam, or Hungry Horse Dam, that you must require an operational plan that will assure you and the country that you get at least 100 cents worth of value out of every dollar you spend on those dams.

Mr. MACK. The President the other day, I read in the newspapers, made the statement that he believed that the control of the river valleys should be in the hands of one agency of the Government. He named the Department of the Interior. Do you believe we should consolidate the work of the Army engineers, the Reclamation Bureau, and the other services connected with protection against floods, and that it should be placed in one agency of the Government?

Mr. STRAUS. That can be done in two or three dozen different ways. I have heard them all discussed. I do not know which one the President was referring to, but I do think that for the operation of a river there should be a single agreed plan with a fixed responsibility on somebody that will assure the operation of the structures on that river to yield the greatest benefit and insure against any operation of any structure in conflict with any other structure.

Who and why and how and where that agency is created—whether it is the Bureau of Reclamation, which does have some experience in these matters, or whether it is an entirely new water master organization, or a State or Federal organization on the river, I do not know. But I do want to see one single operational plan on a river, no matter who administers it, so designed and agreed upon as to get the utmost benefit out of every structure on that river.

That can be done, and it requires agreement. It will never be done in conflict. It requires agreement and acceptance by a multitude of agencies. Not the Army and the Bureau alone, but the States, the interests such as the navigation interests versus the flood control interests, versus the fish interests, versus the upstream interests, versus the downstream interests, versus the kilowatt interests. You are going to have to bring all those into harmony for the greatest benefit from the operation of the structures on any river system. We are trying to evolve that.

Mr. MACK. Just one other question. What is the basis for the policy of not requiring interest payments on reclamation projects? What is the reason of that provision?

Mr. STRAUS. That policy was evolved by the Congress in 1902 under Theodore Roosevelt. It was originally financed by revenues received by the exploitation of the natural resources of the West—that is, gold mines, sale of land, coal, oil, and other items—and reinvesting those revenues in the further development of resources in the West.

Now, why do they make it no interest payment? Well, of course, I am not always privileged to know entirely what is in Congress' mind when it does anything, but reading that debate as I have, I believe Congress figured it was about the best national investment they could make, and that the creation of new wealth would do far more for the country and for the Treasury than collecting interest during that 40 years.

I think Congress was most wise in that. The only subsidy if you want to call it a subsidy—and I believe in calling it a subsidy—is interest-free money for irrigation that goes to reclamation.

In your country, Congressman Mack, we have some examples of how that has paid off from a Treasury point of view. Up there there is the Tieton division of the Yakima project which was one of our early projects, a three to four million dollar project, with not very many thousands of acres of land. Forty years pay out without interest. That one pay out 100 percent without interest. Uncle Sam got back out of it every nickel he put into that irrigation project. They burned their bonds and paid it off with interest. That is one thing that happened.

However, a more important thing happened there too. When the Tieton division was started the tax collector never even went around the place. There was nothing there but timber wolves and rattlesnakes, and you cannot collect taxes from them. Since the project was built and a community was established the Federal income-tax collector—and that is the only one I am speaking of, and not his cousins from the State and county—but Uncle Sam's boys came there and they liked it and stayed, and they have collected 13 times the total cost of the project. It already has paid off without interest to the United States Treasury by Federal income tax alone from the new wealth created there by irrigation alone since the Federal income-tax law was passed in 1913. That does not represent one nickel that the State and the county, or the school board or the mosquito abatement district also collected. They are all collecting too. That is the theory of new wealth.

Mr. MACK. I am not opposed to an interest-free formula for reclamation projects. I wanted to get your explanation, and I think you have made a very effective and logical one.

I thank you Mr. Commissioner.

Mr. SMITH. Mr. Magee, do you have a question?

Mr. MAGEE. I will be very brief. You have this 160-acre limitation. After the homesteaders prove up on their homesteads is it possible under the laws that now exist for one neighbor to buy his neighbor's 160 acres, or is that limitation on it?

Mr. STRAUS. Not quite in those terms. In certain ways they could do that; but not in those terms, Mr. Magee. The 160-acre limitation in reclamation law is a prohibition on myself. I am outside the law if I sell water to any land in individual title in excess of 160 acres. That is the point of approach to it. No man can get Federal reclamation water for more than 160 acres. He might have 10,000 acres and have a lot of water of his own. Or, maybe he did not want water on some of the 10,000. But he can only get water from me for 160 acres until the project is all paid off. That is a carry-over from the old Homestead Act.

Mr. MAGEE. What is it going to cost the homesteader per acre on this first 66,000 acres?

Mr. STRAUS. I think it runs about 80 acres.

Mr. MAGEE. No. What is the cost per acre going to be on this first part?

Mr. STRAUS. The cost per acre——

Mr. MAGEE. I am not talking about what he pays for water each year, but what is the cost of the water right? In other words, it would be the same as paying for the land.

Mr. STRAUS. It is about $255. The investment of the Government for providing water to those acres averages out at about $255 per acre, most of which is borne by power revenues.

Mr. SMITH. In other words, it does not cost the landowner that?

Mr. STRAUS. No. I think the landowner pays about $2 per year per acre, plus operating and maintenance cost. I think the cost that is paid per acre in its entirety over the entire period is approximately $85 per acre if I remember correctly. The balance between that and the $255 if I remember correctly or about that figure, is paid by power revenues.

Mr. MAGEE. I have homesteaded under the Shoshone and Cody projects.

Mr. STRAUS. Which opening was that, Mr. Magee?

Mr. MAGEE. That was in 1920, over 32 years ago. At that time we paid down 5 percent the first year and then we did not pay any more until I think the fifth year. It was amortized in 20 years. I see now it is a 40-year proposition.

Mr. STRAUS. You are right. They were rougher in your day as a homesteader, Mr. Magee, when they started out. At one time they thought the irrigator should pay off the whole thing in 5 years.

Mr. MAGEE. It cost us $95 an acre. Of course, that was for the right to use the water. Then we paid the service charges each year. Then after we irrigated 3 or 4 years the water got down and hit rock underneath, and formed a bog, so we had to pay an additional $30 an acre to bring steam shovels in and put ditches through there for drainage. That made a total of $125 an acre that it cost us.

Mr. STRAUS. I was out at the Shoshone last year, and I talked with many of the original settlers that stayed on. They had a rough time. The change in national policy as reflected in the laws is quite clear.

The amortization period used to be much shorter. The burden on the irrigating settlers was much heavier. It frequently crushed one or two generations of them. Also, a project did not come into full operation anywhere near as fast as one does now. It used to take 20 years to get a project all leveled off and producing. Now the project is in production about the same time the water rights are.

Mr. MAGEE. I went to work for these people 35 years ago this month. I was one of the best darned pick and shovelers you ever saw out there and pretty good with a short-handled shovel mixing concrete.

Mr. STRAUS. Mr. Magee, were you ever a ditch rider?

Mr. MAGEE. I never took one of those jobs, but I am very familiar with the work. Just one other question. I assume you people have not built or do not contemplate building any projects on the lower Mississippi?

Mr. STRAUS. No. We are not authorized to build any projects on the lower Mississippi.

Mr. MAGEE. That is all.

Mr. SMITH. Mr. Commissioner, there are some questions which the committee staff and the chairman wanted to ask you but time is running short, and we are running into the session of the House. We have already run into it today. Would it be possible for you or a representative of your office to be here tomorrow with Secretary Searles?

Mr. STRAUS. I am at the committee's service. I want to point out I think it would be proper to hear many other phases I have not covered. You might want to hear from Secretary Dick Searles, who is an able irrigator. Like Mr. Magee, Mr. Searles operated in the irrigation district too. He might know a good deal more about it than I do. I will be subject to the committee's call on any questions we have not answered in the formal written submissions.

Mr. SMITH. We will have another session tomorrow at 10 o'clock.

I notice that your statement points out that this is the fiftieth year of the Reclamation Bureau's history and I want to take this opportunity to say for the committee that I think the Bureau certainly has had a fine record. It was the first effort on the part of the Government to do something about conserving this soil of ours, and we think it ought to continue on a better basis in the future.

Mr. STRAUS. Thank you, Mr. Chairman.

Mr. SMITH. The committee will stand adjourned until tomorrow.

(Whereupon, at 12:20 p. m., the committee adjourned until 10 a. m. the following day, Wednesday, May 7, 1952.)

STUDY OF CIVIL WORKS

WEDNESDAY, MAY 7, 1952

COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE TO STUDY CIVIL WORKS,
Washington, D. C.

The special subcommittee met, pursuant to adjournment, at 10:10 a. m., in room 1302, New House Office Building, Hon. Henry D. Larcade, Jr., presiding.

Charles D. Curran, staff director.

Mr. LARCADE. The committee will come to order. The committee hearings will continue as per schedule and at this time the committee will be very glad to hear from Under Secretary of the Interior, Mr. Richard D. Searles. Is Mr. Searles present?

STATEMENTS OF RICHARD D. SEARLES, UNDER SECRETARY OF THE INTERIOR; E. P. EARDLEY, CHIEF ENGINEER, DIVISION OF WATER AND POWER, OFFICE OF THE SECRETARY, DEPARTMENT OF THE INTERIOR; AND GEORGE E. TOMLINSON, ASSISTANT DIRECTOR OF PROJECT PLANNING, BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR

Mr. SEARLES. Mr. Chairman, I have a short prepared statement here I would like to read.

Mr. LARCADE. Without objection you may do so.

Mr. SEARLES. Mr. Chairman and members of the subcommittee, thank you for the invitation to talk with you today regarding the questions which were submitted to the department.

Of the items submitted, Commissioner Straus yesterday covered all of them rather fully. However, I would like to comment to you on the subject of allocation of costs.

In order to obtain the most desirable development of the water-power resources of the United States, the Department considers that an allocation of costs to prior use nonreimbursable purposes is reasonably justified provided the cost so allocated does not exceed the benefits, or the cost of a justifiable alternative, whichever is less. This procedure is essentially the incremental method of allocation. The justifiable alternative development method and the separable costs-remaining benefits method do not recognize priority of use between different purposes.

Admittedly the incremental method results in lower costs allocated to reimbursable purposes and, therefore, there should be a safeguard that no cost allocated to a nonreimbursable purpose exceeds the value of the benefits of such purpose or the cost of the lowest cost justifiable

alternative. In other words, such a method is economically sound and, at the same time, does not foreclose the possibility of worth-while developments.

Reasonable allocations are of the greatest importance because repayment requirements, which in turn govern power rates, are as dependent upon the allocations to reimbursable purposes as they are upon the actual construction costs. The Department's position on the matter of allocation of costs to reimbursable and nonreimbursable purposes is governed by basic economic considerations. These economic considerations are not subject to a mathematical formula. This is one reason why we do not believe in the 50-year amortization period but in amortizing on the basis of the service life of the project.

As you know, for many years flood control and navigation projects which are nonreimbursable have been authorized by Congress without any power installations. In recent years power installations in dams built by the Corps of Engineers have been authorized. In many cases there can be no low-cost power from these installations if the cost allocations to power are made on the basis by which power assumes some of the cost for flood control or other benefits of the dam.

Low-cost power, important to the development of many areas of this country, will not be available in some areas if the developments are to be subject to rigid mathematical determinations which fit in one part of the country but will not in another.

If all the rivers in the country had the same annual acre-feet of flow, the same drop, and the waters were used for the same purposes, it would be comparatively simple to arrive at one formula and use only one formula in the allocation of costs and the determination of power rates. However, since the rivers and the uses of the water vary as much as do the courses of the rivers, any formula must be flexible.

Under the Flood Control Act of 1944, the Secretary of the Interior is charged with the marketing of the power, which marketing is to be based on the allocation of costs and sound business principles. The agency which is charged with the marketing of the power cannot very well be subject to cost allocations made by one or two other agencies.

The voluntary association of the Departments of the Interior, Agriculture, Commerce, Army, Federal Security Agency, and Federal Power Commission in the Federal Interagency River Basin Committee has led to important cooperative considerations. The FIARBC has field agencies in the Missouri and Columbia River Basins, in the Pacific Southwest, in the New England area and in the Arkansas area. States are given full opportunity to participate in investigations by the committee, and their advice and recommendations are given very careful consideration.

We have found this interagency committee very beneficial.

Mr. LARCADE. Thank you very much for your statement, Mr. Searles.

In keeping with the purpose of this committee's functions at this time, we would like for you to submit to interrogation by our staff director, Mr. Curran, and thereafter to interrogation by members of the committee.

Mr. SEARLES. All right, sir.

Mr. CURRAN. Mr. Secretary, in your statement there is a sentence which reads as follows:

> In many cases there can be no low-cost power from these installations if the cost allocations to power are made on the basis by which power assumes some of the cost for flood control or other benefits of the dam.

Have you in mind any particular structure at the present time at which allocations of cost for flood control are made to power or where power is expected to pay some of the flood-control cost? My understanding has been that the allocation being used in the computation of the Corps of Engineers and of the Federal Power Commission is that power bears its own cost made up of the costs directly allocable to power, and some portion of joint costs. The only activity that we know of that has any part of it borne by power costs is irrigation. The one you mentioned is flood control, and I wonder if you could expand on that?

Mr. SEARLES. Let me explain that this way: There are quite a few areas where there has been flood-control work and there would continue to be flood-control work which would be both by channel correction and by the installation of dams where there would not have been any power installations if the change in the program had not occurred along about 1940. Where the power installation is added, and the power installation takes the increment of the joint costs over and above the cost of the flood-control installation by itself. In some of these areas you will arrive at a power cost which is possibly above that of other energies, such as oil, gas, or coal.

In the Arkansas area—and my memory does not serve me as to the dam; perhaps Mr. Eardley will recall it—there was one dam submitted to the Congress where, in order to get a 1-to-1 benefit, power was considered in order to make it feasible as a flood-control project.

Mr. CURRAN. In determining the allocation of costs for the purpose of establishing rates, has a computation been proposed where power would bear some share of costs more properly allocable to flood control?

Mr. SEARLES. From our point of view? No. I think I can answer that rather definitely; no. I would like to check with Mr. Eardley on that Southwest computation. Is my answer to that correct?

Mr. EARDLEY. Yes.

Mr. CURRAN. So that your statement which I read there is more in the nature of the sounding a caution than reference to some example where the power would carry some of the flood control?

Mr. SEARLES. That is right.

Mr. DONDERO. Mr. Chairman.

Mr. LARCADE. Mr. Dondero.

Mr. DONDERO. I have listened with great interest to the proposal made that a great deal of the costs which could be allocated to power are allocated, we will say, to flood control, irrigation, or reclamation. I think we have had some evidence on the record to the effect that there has been a policy or a tendency to charge flood control, irrigation or reclamation in a multiple-purpose dam with a part of the cost which could be properly allocated to power in an effort to show that power would be generated at that dam at such a low price that no private enterprise in that area could compete with it. What do you say about that?

Mr. SEARLES. No; I do not feel that is so.

Mr. DONDERO. Do you call in the Army engineers when you come to allocation of costs?

Mr. SEARLES. We have conferred with them over the last 2 years innumerable times.

Mr. DONDERO. You mean in regard to that subject?

Mr. SEARLES. Yes.

Mr. DONDERO. Who does the allocating within your Department as to the costs on a multiple-purpose dam?

Mr. SEARLES. In the Southwest Power Administration they do the allocation. The agencies themselves handle the allocation.

Mr. DONDERO. Like the Southwest Power Administration, and so on? It is not done within the Department?

Mr. SEARLES. You mean by a staff in the Department of the Interior?

Mr. DONDERO. Yes.

Mr. SEARLES. The staff of the Southwest Power Administration is in a sense in the Department of the Interior. We in turn checked it with our staff in the Department—the staff which is part of my office.

Mr. DONDERO. But it is done within the Department?

Mr. SEARLES. Oh, yes.

Mr. DONDERO. A question has arisen here as to where do you get the authority for taking revenue from power produced at a dam and using that toward amortizing the costs of irrigation or reclamation in the same area and from the same dam. Is that in the law?

Mr. SEARLES. That is in the Reclamation Act.

Mr. DONDERO. But not the Flood Control Act of 1944?

Mr. SEARLES. No.[1]

Mr. DONDERO. But it is writen in that law?

Mr. SEARLES. Yes, indeed.

Mr. DONDERO. Do you remember the year of the law? What year was it?

Mr. SEARLES. 1902 was the original time of the act. Whether that is in the 1902 version or the 1939 amendment I am not clear, but it is in the law at the present time.

Mr. DONDERO. Is the money covered into the Treasury, or do you simply take the money received from power receipts and apply it to the cost of the entire project, or is it first covered into the Treasury?

Mr. SEARLES. All of our income goes directly to the Treasury first.

Mr. DONDERO. Yes. He was going to answer your question, Mr. Curran.

Mr. CURRAN. I would like to pursue further this question Mr. Dondero just raised.

Yesterday Commissioner Straus said, and I read from his prepared statement:

> This basin-account principle is now operating in the Central Valley and Missouri River Basin projects, and recommendations have been made to extend it to the Columbia and Colorado River Basins.

From that, I take it there is no general reclamation law that would apply to the Missouri River Basin, but there must be some special legislation that applies. As I understand the basin account, that would mean that the receipts from power, including the Corps of

[1] Subsequently this answer was supplemented by adding the words "except as provided in section 9c of that act."

Engineers' constructed power projects, would be covered into a single account and those funds may be expended on irrigation improvements. I think Mr. Dondero was looking for what specific authority there is for setting up the accounts that way in the Missouri River Basin.

Mr. SEARLES. Is the Commissioner coming back to testify later? If he is coming back at a quarter to 11 to testify further, I would prefer that you refer that question to him.

Mr. CURRAN. Is that correct, Mr. Tomlinson?

Mr. TOMLINSON. Either he or I will be here. One of the two.

Mr. SEARLES. If Mr. Tomlinson will call him, he will be here, because he was waiting for a phone call.

Mr. DONDERO. Does the Department of the Interior fix the period of amortization on any of these projects?

Mr. SEARLES. Yes; in setting the rates.

Mr. DONDERO. The reason for that question was the statement in your prepared statement given to us this morning.

Mr. SEARLES. Yes.

Mr. DONDERO. You fix the period?

Mr. SEARLES. Yes.

Mr. DONDERO. And what is the longest period you have fixed for amortization, and what is the shortest?

Mr. SEARLES. I am sorry; I cannot answer that as to what is the longest period the Bureau of Reclamation has ever set. In the Southwest I think it is 65 to 70 years. We have one which was set at 100 years, but that is subject to review and that is one dam. You see, that does not mean—the equipment is covered by various amortization periods, depending on what the item is. The Federal Power Commission set an arbitrary period of 50 years. We have held to the service life of the project, which in some cases would be 65 to 70 years.

I just attended, in Arizona, a rededication or commemoration of the Roosevelt Dam, which was built in 1909. It is coming close to 50 years of age. It easily has another 40 or 50 years to go. A 50-year period is a rather arbitrary period.

Mr. DONDERO. Was that not fixed, Mr. Searles, really to meet the bonds which run for a similar period of time at a percent of interest? Was that not the purpose of it, so as to retire the bonds or any debt of the Government which was incurred in the building of that particular improvement?

Mr. SEARLES. The 50-year period?

Mr. DONDERO. Yes.

Mr. SEARLES. I do not believe the 50-year period has been used.

Mr. DONDERO. Has the 40-year period been used?

Mr. SEARLES. Well, sir, there are too many dams for me to be sure specifically as to what period has been used. I did remember what Hoover was set for, but I think it was something more than 50 years. Of course, that rate was set and all that was determined prior to the time the dam was built.

Mr. DONDERO. You mean the Hoover Dam?

Mr. SEARLES. Yes. Now, on the transmission lines, the period will run 40 years, and on generators and turbines I believe it is 30 years, but the longer period of years is for the dam proper.

Mr. DONDERO. Then, any bonds that might be issued for the building of the project really are not the measure by which the period of amortization is fixed?

Mr. SEARLES. No. The service life is. I do not believe that any specific bonds are issued for a specific dam.

Mr. DONDERO. That may be true, but the general bonds of the Government—we had better put it that way—are issued for a 50-year period.

Mr. SEARLES. I have a project in Arizona where we issued bonds in 1932, 1934, and 1938, when those bonds pay out in something like 30 years, but we amortized those dams at 60 to 70 years ourselves in our own private company.

Mr. DONDERO. You mean a private investment?

Mr. SEARLES. Well, it is the Salt River Valley Water Users Association, which is a private corporation, a cooperative started in 1902. The lands of the farmers guarantee the payment of the bonds. We do not set an amortization on the basis of paying out the bonds.

Mr. DONDERO. Simply on the life of the project?

Mr. SEARLES. Yes.

Mr. DONDERO. That is all.

Mr. LARCADE. Does the gentleman from Missouri, Mr. Magee, have any questions?

Mr. MAGEE. I would like to have a little better understanding of this, Mr. Searles. Have you folks built any dams on the Missouri proper?

Mr. SEARLES. No; we have not.

Mr. MAGEE. I would like to have this understanding. I am not sure I know where the dividing line is between you and the Army engineers. If power or irrigation in multiple-purpose dams are the main elements, then you build them. Is that correct?

Mr. SEARLES. The main element?

Mr. MAGEE. Just what determines who builds the dams as between you and the Army engineers?

Mr. SEARLES. Well, depending on the authorization of Congress. For instance, we built Grand Coulee and the Army built Bonneville. I do not remember when Fort Peck was built, but around 1933 was when the Engineers first went upstream. However, generally speaking, we built the dams upstream. On the Colorado we built all the dams, and on the Missouri they built all the dams.

Mr. MAGEE. You have not built a dam on the Missouri?

Mr. SEARLES. Not on the Missouri proper. We built some dams on the tributaries.

Mr. MAGEE. You have built in the basin, of course, but what I want to understand, Mr. Searles, is what determines who builds the dam? If irrigation is the primary objective or if power is the primary objective, then you folks build them, as I understand it.

Mr. SEARLES. It is pretty much of a policy. My understanding of Congress is that if the primary need is flood control, why the Corps of Engineers builds them. If the primary need is irrigation and water to irrigable lands, why, the Bureau of Reclamation makes the proposal to Congress.

Mr. MAGEE. Does the amount of money expended enter into it or is it just those elements? That is what I am talking about.

Mr. SEARLES. No, the amount of money has not, up to a couple of years ago.

Mr. MAGEE. It is whatever the primary objective is? It is based on that, I assume.

Mr. SEARLES. In the early years the Bureau of Reclamation was the only engineering part of the Government that had ever built any high dams. I do not know what the highest is the corps built, but naturally in flood control on the rivers they were not very high dams. The highest dam they built I believe is under construction now in California. You see, ours were primarily high dams and big reservoirs, whereas theirs were primarily low dams for navigation and flood control.

Mr. MAGEE. During the course of these hearings, Mr. Secretary, there has been a question as to whether you and the Army Engineers cooperate as you should. For example, you are primarily interested in irrigation and power. The Army Engineers are primarily interested in flood control. The charge has been made in this last flood, for example, that you could have released the water from the reservoirs earlier than you did and have saved a lot of floods.

Mr. SEARLES. Could you tell me which reservoirs they stated?

Mr. MAGEE. Do you remember, Mr. Chairman?

Mr. LARCADE. I do not remember at this time.

Mr. MAGEE. I realize, and I am not criticizing you, of course, but I do agree that the general proposition of irrigation and power are very important; but I understand that the Army engineers put the word out some weeks in advance that there would be an early flood this year. It looks to me as if you might have released those waters, knowing that you could have refilled those reservoirs pretty quickly.

Mr. SEARLES. That particular statement I assume came from some responsible party, and I would like to have the complete statement so that I could give you a complete answer. I would assume that the Corps of Engineers, if they felt that way, would make a specific statement. After all, it is their responsibility on the river, and if they thought it would help they would make a specific request to us for the release of water from certain reservoirs stating that it would be helpful.

Would you know if that was done or not?

Mr. MAGEE. No. I thought Mr. Straus testified yesterday, and I was not clear from the questioning. I though he was just evasive about it, and I think that is a very important item. I do not believe your people needed it. You had to protect the people who need water, but this was pretty early, and I do not think the people in those farming regions needed water yet. It was too early, as I understand it myself.

Mr. TOMLINSON. Mr. Chairman, may I volunteer a statement here on this?

Mr. MAGEE. Yes.

Mr. TOMLINSON. The reservoir that Governor Miller brought up is the Fresno Reservoir in Montana. We did not have the information when he brought it up, but we did ask the field for information regarding the operations of that reservoir. We pointed out to our field office that this committee had been informed that the Bureau had been requested to draw down Fresno Reservoir in advance of the recent flood, and would they please make a detailed report on what happened out there.

The word we have just received from the field is as follows:

No requests of any kind were made to draw down Fresno Reservoir. This matter was discussed with the five Chinook districts on March 8, 1952 at meeting held to discuss revised operation and maintenance estimates. Superintendent informed Commissioners that he would draw down reservoir if weather permitted thawing of river ice so that no ice jams would occur. Subzero temperatures occurred during intervals for balance of month and minimum temperatures were below freezing during the period. This prohibited release of water.

Fresno Dam was constructed to provide hold-over storage near project area. Since its primary purpose is to provide water for irrigation of project land it is necessary that as much water as possible held over to assure the water users of an adequate supply. At end of any irrigation season there is no possible way of anticipating spring runoff and it is, therefore, necessary to go into winter with an adequate hold-over. After freezing weather has occurred and ice has formed in Milk River Channel, below Fresno Dam, it is not possible to release additional water since such releases would result in channel being filled with successive heavy layers of ice which would cause damage and result in ice jams and severe flood conditions when spring runoff came.

River ice remained in place on March 25 when water from tributary channels below Fresno Dam entered valley in capacity flows. Ice jams were formed, stream flows increased rapidly and river was leaving its banks all through project area by March 28 when effect of rapidly rising temperatures became noticeable in most tributaries of river.

Storage in Fresno Reservoir reached spillway crest at 4:30 p. m. March 30 and, while water subsequently passed over spillway it was of little importance as compared to flows from larger tributaries below Fresno. Reservoir can only store 127,000 acre-feet of water, but it has in past provided some flood protection in times of flash runoff and did so during current flood.

A preliminary flood routing study indicates maximum inflow into Fresno Reservoir was on order of 20,000 cubic feet per second which was stored in reservoir. This means maximum peak flow was reduced by 20,000 cubic feet per second. Maximum outflow over spillway later reached total of only 6,500 cubic feet per second. Maximum outflow from valley at Nashua estimated at over 42,000 cubic feet per second by United States Geological Survey.

In addition to reducing these peak flows, the dam, by virtue of superstorage, continued to reduce materially flow that would have resulted under natural conditions. During this period flow was reduced by an average of 4,000 cubic feet per second.

At beginning of flood, 29,200 acre-feet of active storage was available below spillway crest. Reservoir continued to rise and store flows until a maximum storage of 154,000 acre-feet was reached on April 3. A total of 56,500 acre-feet of flood flow was impounded temporarily and retarded, thus making a maximum contribution in controlling flood flows in Milk River Valley.

In other words, there was a frozen river, and if you would have let a great volume of water come down you would have had an ice jam form, and when the jam broke the damage would have been considerable. So the Fresno Reservoir was operated keeping in mind the actual conditions both of the river and the weather, and it was done so as to create the most beneficial result possible.

Mr. MAGEE. In other words, you did not need this water for irrigation?

Mr. TOMLINSON. Oh, no; but they already had an ice jam downstream, letting all this warm water go down into the cold, cold water downstream would mean that it would freeze immediately and create a worse jam. The operating experience out there shows that during certain types of weather they can and during other types of weather they cannot safely discharge additional amounts of water.

Mr. SEARLES. When the ice jam broke it would create a tremendous amount of water coming down, which would create a serious flood condition.

What is the capacity of that reservoir; do you know?

Mr. TOMLINSON. About 127,000 acre-feet. Counting superstorage or uncontrolled storage, it held 154,000 acre-feet on April 3, 1952.

Mr. MAGEE. Let me ask you this: Do you have complete cooperation with the Army engineers?

Mr. TOMLINSON. As far as we know, there is complete cooperation in the operation of any space allocated for flood control. The Army sets the regulations for that and we follow it just as conscientiously as those regulations can possibly be followed. We also cooperate to the maximum extent practicable in the space which is not allocated to flood control, but which judgment indicates can be operated so as to get certain benefits to flood control, keeping in mind, of course, that the primary purpose and the reimbursement for that facility is for some other purpose.

Mr. SEARLES. Sometimes I am sure there cannot help but be differences of opinion, but we do not have conflicts or grievances. I spent a great deal of my time, from 1930 to 1940, with the Corps of Engineers working as a civilian, and my contacts were with them and some of their chiefs are my best friends, such as General Wheeler, who was Chief up to 1948, and General Reybold.

Mr. LARCADE. At this point I might say I checked some of the reservoirs on the Missouri River, Mr. Magee, and we find that there is Fort Peck, which of course was a Corps of Engineers project which has been completed, and then there are a couple of pumping stations and the Garrison Dam, the Jamestown unit, Fort Randall Dam, Gavins Point Reservoir, and several others. Those are the reservoirs that are shown on the map before me on the Missouri River. Just which one of those should have been opened up to permit the water to flow down rather than retarding it, which is alleged was responsible in some degree for the terrific flood on the Missouri, is of course a question. I am not familiar with the exact dams or reservoirs that were alleged not to have been opened which might have relieved the situation and which would have contributed to our not having such a great disaster as we did have on the Missouri River.

Mr. SEARLES. Mr. Chairman, may I ask whose statement that is?

Mr. LARCADE. This is a statement I have by the Associated Press of Sunday, May 4.

Mr. SEARLES. I see. Do they state who had the responsibility and what water was not released?

Mr. LARCADE. No. I presume over the reclamation projects the Bureau of Reclamation had jurisdiction and over the flood-control dams and projects the Corps of Engineers has control.

Mr. SEARLES. Of course, that is a newspaper article, but I consider they ought to have definite facts if they make such a charge as that.

Mr. LARCADE. This charge is not made in this particular article. I was trying to furnish the information requested by the gentleman from Missouri with respect to the dams on the Missouri River that it is alleged should have been opened rather than having been used to retard the water. It is alleged that had those dams been opened, or had those reservoirs been opened, that there would not have been so much water coming down in the flood.

Mr. SEARLES. Of course, you have one layer in a reservoir for flood control and one layer in a reservoir for irrigation.

Mr. LARCADE. I realize that.

99217—52—pt. 3——8

Mr. SEARLES. The flood control pays for its part and the irrigation for its part. I can see at times where the reclamation and irrigation end of it might be released on the thought that they will get a later fill of it. Of course, you have the problem there that I have run into on our own system out in Arizona, where all of the capacity of the dams is paid for by the farmers for irrigation. At the present time the dams are within about 20 percent of being full. If a flood comes this summertime, why, it will wash through the city of Phoenix and do considerable damage, but the people who need the flood-control protection have never paid for any part of these upstream dams. It has all been paid for by the farmers and is a reservoir and water for farming.

Mr. LARCADE. I believe this discussion brings out the importance of the point raised by the gentleman from Missouri with respect to the question that he asked about the full cooperation between the two departments, that is, the Bureau of Reclamation and the Corps of Engineers.

Mr. SEARLES. Let me point out one thought there, though. In some cases when you come to the release of the water from the reservoir which was built for irrigation, very conceivably the Bureau would not have the right to release the water because the water would not belong to them. The water would belong to the farms in the farming area, which to some extent have underwritten the repayment of the dam. It is actually their water that is held in the reservoir.

Mr. MAGEE. Yes, but Mr. Searles we are talking about these early floods, before they need the water.

Mr. SEARLES. You realize, Mr. Magee, that I am only giving you a hypothetical case here. If you release the water in the reservoir that is held there for irrigation you will always face the possibility that your later water will not give you a full reservoir for irrigation. You are thinking of a flooded river going out of its banks, but in some of the higher reaches where you might release that water perhaps there was not enough snowpack left to fill up the reservoir with water for irrigation, which reservoir was not built as a flood-control reservoir.

Mr. MAGEE. I cannot conceive of a spring where you would not have enough melting snows to fill up any reservoir. I cannot conceive of that.

Mr. SEARLES. I surely can, because I have gone through it, and not once, but many times. If you have let that water out that is irrigation water and you let it out and it does not refill, then you have a complete crop failure on maybe 20,000 to 40,000 acres.

Mr. MAGEE. I agree with you.

Mr. SEARLES. But in some cases that water is depended on in those farming areas for 2 or 3 years. A lot of places that you speak of in the upper reaches of the Mississippi are not necessarily in an area that has a high rainfall or is highly productive. This snowpack this year in many areas was quite unusual. I am sure that in 99 out of 100 cases there would be cooperation to release such water. The specific case which was referred to earlier here was an engineering problem as far as the ice jam is concerned.

Mr. LARCADE. Does the gentleman from Missouri have any other questions?

Mr. MAGEE. No.

Mr. LARCADE. Does the gentleman from Washington have any questions?

Mr. MACK. I was interested in your statement on page 3 in which you say, "* * * we"—meaning the Department of the Interior—"do not believe in the 50-year amortization period but in amortizing on the basis of the service life of the project."

What would be the service life of a project like Grand Coulee Dam?

Mr. SEARLES. Sixty-five to seventy years.

Mr. MACK. Would that dam not last 100 or 200 years?

Mr. SEARLES. Well, you lose part of it by silting up. You lose part of your capacity.

Mr. MACK. Is it your opinion that the Grand Coulee Dam will last only 65 years?

Mr. SEARLES. No. The dam will last far beyond my lifetime and my son's, but that is a composite figure. There are some things in the dam that will have to be replaced.

Mr. MACK. The machinery and equipment, as you said, will probably wear out or become obsolescent in a period of about 50 years, but the superstructure will last a considerable period longer than that.

Mr. SEARLES. Oh, yes.

Mr. MACK. Have any calculations been made as to the obsolescence of the equipment?

Mr. SEARLES. Of the equipment?

Mr. MACK. Yes.

Mr. SEARLES. That varies greatly. I think the turbines are set at 30 years.

Mr. MACK. Is that the life of the turbine or does that include calculations on obsolescence?

Mr. SEARLES. Obsolescence.

Mr. MACK. New devices may be developed that would vastly improve power production thereby making replacement of some equipment desirable earlier than anticipated.

Mr. SEARLES. That is right.

Mr. MACK. From your statement concerning the control of the water impounded behind these dams I wonder whether you disagree with the suggestion that there should be one over-all river authority in control of releasing this water so as to retard floods downstream. At the present time you have in control of these dams the Reclamation Service and the Army engineers, to mention only two agencies. The Army engineers have control of the water behind dams which they have built. The Bureau of Reclamation has the control of the water behind the dams which they have constructed. If the water of all dams were to be released ahead of an impending flood, do you have to have a meeting and go into a debate as to what the policy should be? Do you not believe a policy for the control of that water so as to prevent floods should be in the hands of one agency of the Government?

Mr. SEARLES. If one agency of the Government had that responsibility they would be faced with what I mentioned before—the loss of that water for farming in the area. When we are speaking of the flood or of irrigation, the whole problem is a matter of destruction.

The flood is destructive. It destroys as it is going down the river. If there is no water in the river for farming that destroys the land for 1, or 2, or 3 years, depending on what the rainfall is later. So no matter who has the over-all responsibility, they still have to be faced with the fact that the people in that area have a right to the water in that reservoir. It is their water, so you have the question of who would pay for the damages occasioned by the release of the water because they could not farm, which could be very, very substantial.

Mr. MACK. Who owns the water at Grand Coulee? That belongs to the people of the United States, does it not?

Mr. SEARLES. I cannot answer about the water rights on that. They have commitments to various of the farming areas up there for the water. We had a very difficult task in ODM and the Bureau of Reclamation when we had the water shortage last August and September up in that area as to whether or not we would shut down a Bureau of Reclamation pump which was taking water out of the lake, Lake Roosevelt, I believe, and if it went through the turbines it would create more power and more aluminum; but still the Government of the United States had a contract with the people in that farming area stating that there would be so much water for their farming. It is a violation of one contract to fulfill another desire. The United States Government is the one who has the full responsibility for the violation of the contract, which says that there is so much water which we will serve to your lands, whether it is up in the Missouri, or the Mississippi, or the Columbia.

Mr. MACK. The floods result from the fact that there is too rapid melting of snow or exceedingly heavy rainfall. If you released the water, the reservoirs will be refilled quickly due to the big storms in the upper valley.

Mr. SEARLES. Congressman, it may or may not be that way. You could go back in history and you could find many cases where they did refill and many cases where they did not.

Mr. MACK. Mr. Straus made the statement here yesterday that he thought there should be some over-all authority for the control of the waters in these rivers, that is, for flood-control purposes.

Mr. SEARLES. We could not see any objection that prior to the time of emergency there would certainly be a coordinated agreement as to what would be done with the reservoir capacities, both for flood control and for irrigation. But also at the same time arrangements or determinations should be made for the compensation of the people in that particular area, wherever it is, whether it is Wyoming, or Utah, or Montana, for the water that might be gone and then there would be no farming.

The United States Government has a case in California right now on what might be anticipated in a water right which the Government claims or the marines claim for Camp Pendleton, which in turn would take away water from crops having a high dollar value. These are farm lands in the Fallbrook and Santa Marguerita area. Here we are already considering the damages due to lack of water for 1 year, or 5 years, or 7 years, or whenever a drought might occur.

Mr. MACK. The argument is constantly made that if we build enough dams in these river valleys we can prevent these floods. Is it not the theory that releasing the water in anticipation of floods will prevent the floods?

Mr. SEARLES. All that program is based on the amount of flood-control space in the various dams. There is a layer for flood control, a layer for irrigation, and very often there is a layer for dead storage down at the bottom, or in some cases there is a layer for power.

Mr. MACK. That is all, Mr. Chairman.

Mr. SEARLES. I think it is very commendable to work out prior to the flood arrangements and agreements by which any capacity in the dam would be relased, but I am sure you realize that in fairness to the people who have the farming lands, consideration has to be given to their rights. Otherwise they would be all over us, as well as the United States Government.

Mr. LARCADE. Mr. Secretary, you made reference to the controversy in California at Camp Pendleton about the water rights. That brings to my mind the same question that arises with respect to the tidelands on the Gulf of Mexico and other water bottoms, which of course Louisiana and California and other States claim the Government does not have the rights on. We realize, of course, the Department of the Interior takes that view, that the Government has paramount rights. I am glad to say yesterday in a conference committee of both Houses they reached an agreement on a bill which they expect to present to the Congress on that question, and it will probably be considered in the next few days.

Mr. Curran has some more questions, I think, Mr. Secretary.

Mr. CURRAN. I want to make it short because I know you have an engagement.

In your statement you say:

> The agency which is charged with the marketing of the power cannot very well be subject to cost allocations made by one or two other agencies.

As I understand it, taking a typical situation, one where the Corps of Engineers constructed reservoirs in the Southwest Power Administration area, you have three possibilities. The agency that built the structure can make a cost allocation; the agency that is going to sell the power, the Southwest Power Administration, can make the allocation; or, some distinterested agency, such as the Federal Power Commission.

The Interior Department's position is that the selling agency should make the allocation rather than either of the other two. Is that correct?

Mr. SEARLES. Yes. I have had considerable discussion with Chairman Buchanan on this subject, and I am sure some of the members of that Commission feel that the rate approval by themselves is not the proper place for it; that the determinations as to rates should be made by the agency which is marketing the power. The statement which they filed with you says in their recommendations that the agency of the United States which has the rate-making authority with respect to the sale of power—we set the rate—the law says that the Secretary shall market the power at a rate—they recommend in recommendation No. 3, as I interpret it, that the marketing agency be given complete control of it.

They also ask in recommendation No. 2 that they be relieved completely of all responsibility with respect to rates at which hydroelectric power produced at Federal multiple-purpose dams shall be sold, or that as an alternative the Commission take the whole thing over.

For about 3 months I have gone through the problem of a contract, negotiating one with the Arkansas Power & Light Co. and Reynolds Metals Co., and I quite agree with them that whoever markets the power should determine the rate at which it should be sold, which includes making the allocation of costs.

When you get on the allocation of costs it all comes up as to whose theory it is. If I am right on what is known as the Green Book, the Corps of Engineers presented 15 different theories by which costs might be allocated. When you make your determinations as to the sale of the power, in some of these areas, as you know, the drop is greater and the volume of water is greater, and the flow of the rivers are more consistent, whereby you get a much lower rate at which you can sell the power. In that case you do not have much of a problem, but in some of these other areas the area would like to have the benefit of low-cost hydro power with its private utility, or where it is public-operated. The Arkansas Power & Light Co. is definitely a private utility with whom we contract on this power. That area certainly desires the benefit of everything possible in the way of low-cost hydro power.

When you get in an agency which also has other interests such as flood control, they would naturally lean over to taking some of the power income to better their flood-control picture. All through the United States we have harbor improvements, and we have navigation improvements, and we have flood-control improvements which are all nonreimbursable. If you get into an area of the country such as the Arkansas Valley where you are going to have flood-control dams, if those areas can be aided by the installation of power facilities in those particular dams and the power sold at the cost of those installations, then you are going to help that particular area develop. We have quite a few areas of the country where that is true.

I come from the West, where that is not nearly as important because the flow of our rivers is greater and the drop is greater, and we have an awful lot of low-cost power. In my own system in Arizona we make some of the power under 2 mills from our hydro. That is a great advantage for us. It has helped us greatly to build the city of Phoenix from 30 to 40,000 up to a quarter of a million. All that helped. The water we get from the Colorado River has been a great help to us. We still buy some power there for 2 mills, but the average now is around 5 mills.

It just depends on what happens in the area of the country as to whether or not they get the same benefits from hydroelectric power developed from the Government as others do.

Mr. CURRAN. I have a question on another subject, Mr. Secretary. You brought up the question of interagency cooperation, mentioning particularly the Missouri, Columbia, Pacific Southwest, and New England, and Arkansas areas. Let us talk about the New England area.

At the present time the survey being undertaken by the six Federal agencies is estimated to cost the Federal Government about $5,400,000. That survey will be completed 2 years from next June. In the directive given to that committee under their procedure the first sentence reads, and I quote:

The committee will take action as a committee on those matters wherein there is unanimous agreement.

In other words, there is cooperation and coordination as long as there is unanimous agreement. We are going to spend $5,500,000. What are the mechanics set up to resolve the nonunanimous questions?

Mr. SEARLES. I am sorry, but I cannot answer too well on the interagency committees. Perhaps Mr. Eardley can answer on that.

Mr. EARDLEY. The set-up is that you have interagency field committees such as the New England field committee. Any differences of opinion would be referred to the main committee here in Washington, made up of representatives of the different departments here in Washington. Now, maybe that main committee representing all of the departments could resolve the differences of opinion. If it could not resolve the differences of opinion then there is no board of appeal beyond that. You just have differences of opinions between departments, and I think it rests at that point.

Mr. CURRAN. The point is that in this example for $5,500,000 under the present set-up we could get a survey of New England showing the points upon which the six agencies agreed and omitting entirely the points on which they are in conflict.

Mr. EARDLEY. I think your final report would have the complete report stating the opinion of every one of the agencies, regardless of whether there was unanimous agreement or not. Each one of the agencies would have a section of that report, just as they are in the Arkansas-Red-White. But in recommending what should be done by the Congress, the recommendations, as I get it, would be only those recommendations on which there was unanimous agreement. You would have one department recommending one thing. That would be in the report, but it would not be the recommendation of the whole committee. You might say it would be a minority recommendation. You would have one department recommending this, and another department recommending that, and so forth, while here together you would have some recommendations on which they all agree.

On those points on which they disagree—and there no doubt would be quite a few of them—they could appeal from the field committee level to the main committee here in Washington, made up of the representatives of the different departments. If that main committee, the Inter-Agency River Basin Committee, which meets here in Washington, did not resolve those points, then I know of no court of appeal, you might say, or no line of appeal, that could resolve those points except Congress itself.

Mr. SEARLES. I think the paragraph there refers to what they are in agreement on, but that does not preclude an answer for the balance of them.

Mr. Chairman, I have a report to make to the Mobilization Board on the oil strike. I mentioned it to Mr. Curran that the meeting was at 11 o'clock, and I would like to be excused as soon as it is convenient.

Mr. LARCADE. At this time the Chair will observe that the gentleman from Michigan, Mr. Machrowicz, has just arrived, and before you leave I was wondering if he has any questions.

Mr. MACHROWICZ. No questions.

Mr. LARCADE. Thank you very much. We have been very glad to have had the opportunity of hearing you this morning.

Mr. SEARLES. I am very glad to have been here.

Mr. LARCADE. Does Mr. Tomlinson desire to make any further statement in addition to that made by the Secretary?

Mr. TOMLINSON. No, sir. I do not have any statement to make, Mr. Chairman, but I would be glad to answer any questions that you have.

Mr. LARCADE. I think our staff director has some questions to direct to you, Mr. Tomlinson, and if you will take a seat we will be glad to have you answer the questions by the staff director, Mr. Curran.

Mr. TOMLINSON. Yes, sir.

Mr. CURRAN. A short while ago a question was directed to Mr. Searles and he suggested you might be able to answer it. It is a question on the basin account principle.

The Commissioner of Reclamation stated yesterday that that principle is now operating in the Central Valley and Missouri River Basin project and that recommendations have been made to extend it to the Columbia and Colorado River Basins. As I understood the Under Secretary, his impression was that the basin account was set up or authorized under basic reclamation law. The Commissioner's statement would appear to be somewhat at variance with it. The particular point I would like to develop is the authority for using the basin account principle on the Missouri River Basin project.

Mr. TOMLINSON. That is very easily answered, sir. Reclamation law permits the pooling of all revenues from a projects to pay out all of the project costs allocated to reimbursable purposes. This basin account permits treating of the projects or units in a basin as one project, with the result that you can pool the revenues from all of these projects to pay out all of the reimbursable costs. With regard to the Missouri Basin project, that authority is given in section 9 (c) of the Flood Control Act of 1944. I do not have the law before me, but I am reasonably sure that is the section—9 (c). It states something like this: With regard to basin-wide accounting of costs, revenues, repayments, and so forth, the project as encompassed in Senate Document 191 and House Document 475, as coordinated by House Document 247, shall in effect be treated as one project.

Mr. CURRAN. Section 9 (c) of the Flood Control Act of 1944 reads, and I am reading it from a statement presented by the Federal Power Commission, and not from the law itself, as follows:

> Subject to the basin-wide findings and the recommendations regarding the benefits, the allocations of costs and the repayments by water users, made in said House and Senate documents, the reclamation and power developments to be undertaken by the Secretary of the Interior under said plans shall be governed by the Federal reclamation laws * * *

That is what you consider the authority?

Mr. TOMLINSON. That is right. You see, basic reclamation law permits us to do that for one particular project. This in effect makes the entire Missouri River Basin project as described in those documents one project.

Mr. CURRAN. That leads to another point. That particular section refers to power developments to be undertaken by the Secretary of the Interior. We know from the Federal Power Commission that the Department of the Interior has interpreted that law to supersede section 5 of the Flood Control Act of 1944, which requires or provides that the Department of the Interior shall sell power produced at power developments of the Corps of Engineers at rates approved by the Federal Power Commission. This I take to mean that a power development of the Corps of Engineers in the Missouri River Basin is considered to be a power development of the Department of the Interior.

The two points are that by making that interpretation the Department of the Interior finds that it does not need to get the approval of the Federal Power Commission as required in section 5 of the act; and also, under the basin account principle it can use the revenues from these Corps of Engineers power developments for irrigation developments. Is that correct?

Mr. TOMLINSON. I am not as familiar with that as I should be. I am sorry that that did not come up when Mr. Eardley was here. He is Chief Engineer of our Division of Water and Power, but as I understand it our Department has administratively decided that section 9 (c) does permit the incorporation into the one project for rate-making and reimbursement purposes of all the projects listed in those three documents mentioned in section 9 (c). I would like to place in the record at this point a pertinent document.

Mr. LARCADE. Without objection, it is so ordered.

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington 25, D. C., March 10, 1950.

MEMORANDUM

To: Secretary of the Interior.
Through: Division of Power.
From: Commissioner, Bureau of Reclamation.
Subject: Establishment of Power Rates—Missouri River Basin Project.

As you are aware, certain plants for the production of hydroelectric power at dams being constructed by the Army engineers as units of the Missouri River Basin project are expected to be completed and ready for initial operation about 1954.

The Secretary of the Interior, under the provisions of the act of December 22, 1922 (58 Stat. 887), hereinafter called the act, is the marketing agent for Missouri River Basin project power. He has, by order No. 2177, dated March 29, 1946, delegated that marketing function to be performed by the Bureau of Reclamation. A prerequisite to the marketing of power is, of course, the establishment of rates.

There are attached for your approval proposed schedules of interim rates, covering the market area generally described as North and South Dakota, central and eastern Nebraska, western Iowa, and western Minnesota. The proposed rate schedules are applicable to wholesale firm power service, to wholesale power service to customers having their own generating facilities, commercial irrigation pumping power service, irrigation pumping power service for Federal projects, and project employee service.

The proposed interim rates for wholesale firm power service is composed of two parts, a demand charge and a load factor energy charge which assures an equality of average rate for energy supplied at the same load factor to either large or small power customers and is of the type and form now being used by the Bureau on most of its power systems. The rate schedules for wholesale power service to customers having their own generating facilities, for commercial irrigation pumping power service, for irrigation pumping power service for Federal projects and for project employee service are all in conformance with Bureau policy with respect to the type and form of rates best suited to Bureau operations.

The attached report on proposed interim rate schedules for Missouri River Basin project, dated March 1950, discusses the rates and summarizes the estimated results from their application. Revenues to be received from wholesale firm power sales are estimated to average 5.5 mills per kilowatt-hour. Revenues from the sale of energy for project pumping and of secondary energy are estimated to average 2.5 mills per kilowatt-hour and 3 mills per kilowatt-hour, respectively. Estimated revenues are determined to be sufficient to accomplish the assumed repayment requirements. The establishment of the proposed rates will constitute an additional step in accomplishing increased uniformity of rates as between Bureau projects.

The Federal project, known as the Missouri River Basin project, in the States of Colorado, Wyoming, Montana, the Dakotas, Nebraska, Kansas, Minnesota, Iowa, and Missouri, consists of many units of far-flung variety and provides generally for a comprehensive plan for flood control and for reclamation and power developments. With certain exceptions not pertinent to this discussion, the plans and recommendations for development of the Missouri River Basin that had theretofore been made and transmitted to the Congress by the Department of the Interior and the Department of the Army covered much the same territory and had many similar features. Agreements were reached by representatives of the agencies concerned which apportioned to each agency the construction of certain general features of the over-all plans. These agreements are reflected in Senate Document 247, Seventy-eighth Congress, which is described in the act as having "revised and coordinated" the general comprehensive Interior and Army plans contained, respectively, in Senate Document 191 and in House Document 475.

In accordance with the principles underlying reclamation law, the rates have been designed to be sufficient not only to cover the amortization of the power investment, but also, to the extent necessary, to assist in the return of irrigation costs that are beyond the repayment ability of irrigation water users.

The determination of rates in the attached report is based on the presently authorized Missouri River Basin project. However, examination of the House and Senate documents reveals a solicitude that the works proposed be considered, together with existing and certain prospective Federal developments in the area, as comprising one grand, comprehensive, basin-wide plan, the aggregate costs of which should be evaluated against the anticipated over-all benefits, on a basin-wide basis, and the amortization of and accounting for the reimbursable costs of which would likewise be on a basin-wide basis. Appendix B of the report clearly demonstrates that the proposed rates are also adequate on such a basin-wide basis. At the appropriate time it is intended that such legislation as may be necessary to bring about this basin-wide concept be submitted to the Congres.

I recommend that you approve the rate schedules contained in the attached report to be immediately available for use by the Bureau of Reclamation in the marketing of Missouri River Basin project power in the market area generally described as North and South Dakota, central and eastern Nebraska, western Iowa, and western Minnesota.

MICHAEL W. STRAUS, *Commissioner.*

I concur, March 20, 1950.

WALTON SEYMOUR,
Director, Division of Power.

I also concur, March 21, 1950.

WILLIAM E. WARNE,
Assistant Secretary.

Approved, March 24, 1950.

OSCAR L. CHAPMAN,
Secretary of the Interior.

Mr. LARCADE. Are there any questions by the gentleman from Michigan, Mr. Machrowicz?

Mr. MACHROWICZ. No.

Mr. LARCADE. Mr. Mack?

Mr. MACK. No.

Mr. LARCADE. Any further questions, Mr. Curran?

Mr. CURRAN. Yes.

At a recent hearing former Gov. Leslie A. Miller, of Wyoming, reported on a project of the Bureau of Reclamation called the Glendo project. In effect he said that the Glendo unit as originally presented to Congress was a small silt-control reservoir of 150,000 acre-foot capacity, estimated to cost $750,000.[1] He said by administrative action of the Department of the Interior that had been expanded to become a two-dam hydroelectric development estimated to cost $42,000,000. He said the Bureau had added 800,000 acre-feet for power storage. Can you make any comment as to the accuracy of that statement?

[1] Testimony subsequently amended. See letter, p. 182, pt. 1.

Mr. TOMILSON. Yes. I am glad to comment on that, Mr. Chairman.

I think Governor Miller brought up the Glendo as a good example, as he put it, of showing that Congress had delegated too much of its authority to the executive branch. He was talking about the Corps of Engineers and the Bureau of Reclamation, taking a nominal authorization and then building what they pleased under that authorization without coming back to Congress and explaining to Congress and getting congressional approval for going along with any modification or changes which were deemed desirable from the original authorization.

The Glendo unit, which is on the North Platte River near Glendo, Wyo., is an authorized part of the Missouri River Basin project. It is very clearly spelled out in Senate Document 191, and as Governor Miller said, it was listed in that document as a small reservoir of 150,000 acre-feet estimated to cost $4,000,000. It did not include any power plant and was just a small more or less single-purpose reservoir. As we studied the Missouri Basin in more detail we soon came to the conclusion that a larger reservoir was desirable and warranted at this particular site. In fact, in our preliminary studies we thought that a reservoir capacity of about five times the 150,000 acre-feet, or 750,000 acre-feet, would be desirable. We also thought a power plant would be desirable there. So as we have always done we came to the Congress through the appropriation process and voluntarily disclosed the desire on the part of the Department to make this modification, and clearly pointed out the increased benefits and the increased costs. We did not conceal anything.

We discussed this in great detail before the committees. As a result the Congress did tell us to go ahead and make studies, but before they appropriated construction funds for that particular unit, they wanted us to make a detailed plan and report on the larger-size reservoir and the power plant and the other facilities, and to submit that report to all of the affected States—there being three, namely, Colorado, Wyoming, and Nebraska—and to get their comments, and then send the report to Congress for its approval. We are now in the process of doing that.

The report has been completed. It is now out for review before those States. I do not know where Governor Miller got his information, but I think the story which I have recited, and it can be documented, will bear out just the opposite of the conclusion that Governor Miller reached, Congress is keeping abreast of such units as the Glendo and they do have their finger on the pulse of the program and are in a position to get the facts and decide fully which way the Congress wants to go on this development.

Mr. CURRAN. Thank you, Mr. Tomlinson.

Yesterday Commissioner Straus gave some figures on flood storage on the Missouri Basin. I think that you were assisting him at the time. He spoke of nine dams having a total capacity of 5,356,430 acre-feet and of others that will come into being in the next 12 months having an additional 4,271,600 acre-feet of reservoir space. I think the impression may have been left with the subcommittee that that 10,000,000 acre-feet of space is reserved for flood control or is completely available for it. Is that accurate?

Mr. TOMLINSON. No, sir. First, one correction. The nine reservoirs he mentioned was an error. It should have been 32.[1] He was reading from this table. There are nine reservoirs in the authorized Missouri River Basin project which have been completed. There are 23 other projects in the Missouri River Basin area which have been completed. He transposed those columns. The total acre-feet he gave you in the Missouri River Basin area or 5,356,430, is correct, but that should be 32 reservoirs. A goodly portion of that capacity, is in those nine reservoirs in the project itself. About a third or a fourth, I think, is in those nine, but we did have a lot of projects in existence before the Missouri River Basin project or built concurrently, such as the Colorado-Big Thompson. So it should be 32 reservoirs with a total capacity of 5,356,430 acre-feet which have been built and seven additional now under construction with a capacity of 4,271,600 acre-feet, and there are approximately 100 more which are authorized but not yet started, with a capacity of around 25,410,000 acre-feet. But that is total controlled storage capacity. It is not just flood-control capacity.

Mr. CURRAN. Do you know how much flood-control storage was available during the recent floods? It is not the 5,356,430, nor is it the 10,000,000. I just want to get the record straight because the Corps of Engineers' total flood-control storage on the Missouri is something under 17½ million acre-feet, and the subcommittee has a figure of 10,000,000 along with the 17½ million, which shows the Bureau of Reclamation would have made that much flood control possible, and I think that is an error.

Mr. TOMLINSON. No, sir, and I think we indicated yesterday that the Bureau of Reclamation capacity was less than the Corps of Engineers' capacity, and that is true. Certainly the flood-control capacity is considerably less than the Corps of Engineers' flood-control capacity. Unfortunately I do not have with me this morning the allocation of space of this nearly 10,000,000 acre-feet as between the various purposes.

Mr. CURRAN. I wonder if at the proper place in the record you would indicate the amount of these storages that are available for flood control?

Mr. TOMLINSON. I will be glad to have that done, sir.

(The requested information is as follows:)

Reservoirs:	*Flood control storage capacity (acre-feet)*
Completed (32)	778,500
Under construction (7)	1,073,800

Mr. DONDERO. Mr. Chairman, this may not be a proper question to the witness, but in all the years that I have been here I do not think I have ever heard it stated on the record what is a simple definition of an acre-foot of water. Can you do that in simple language which anybody can understand?

Mr. TOMLINSON. I am sure I can, Mr. Dondero. An acre-foot of water is that water which would cover a flat acre 1 foot deep. It is 43,560 cubic feet.

Mr. DONDERO. Even Members of Congress can understand that.

[1] This correction has been made in the printed text.

Mr. TOMLINSON. To relate that, it is 1 cubic foot per second flowing by a given point will discharge roughly 2 acre-feet per day.

Mr. DONDERO. I did not mean to interrupt you.

Mr. CURRAN. No, sir. That was at a good point.

In discussing flood control with Commissioner Straus we did not discuss a third agency that is concerned with flood control. He mentioned the relationship of the Bureau of Reclamation and the Corps of Engineers. The Department of Agriculture also has some flood-control responsibilities and some runoff retardation responsibilities. Can you tell us anything about the relationship between the Bureau of Reclamation and the Department of Agriculture in that particular type of activity?

Mr. TOMLINSON. Yes. It has been very pleasant and been very close. We have no quarrel at all with Agriculture's program. I suppose you mean specifically with the watershed protection program. We are all for that. I do think it has a very definite and a very material place in total basin development. My own personal opinion is that perhaps that part of that program is overrated when it comes to the major floods of record, but it is not overrated when it comes to the minor floods. It is my personal opinion. It is a very controversial subject. You get proponents and opponents on both sides of the question, but I do think especially in regard to the smaller floods and especially in regard to the soil conservation that it is extremely important.

Mr. CURRAN. The point I wanted to get to primarily is, does the Bureau of Reclamation carry on similar work anywhere or, if you know it, does the Department of the Interior carry on water flow retardation work or upstream water control comparable in nature to that which the Department of Agriculture is carrying on?

Mr. TOMLINSON. I would say that our program is nowhere near comparable in scope or character to that carried on by Agriculture. The Department of Interior does have certain park and range lands where programs are carried on. Unfortunately I do not think they have the appropriations to do an adequate job there. The Bureau of Reclamation does none of that at all. We do furnish advice and assistance largely through the State colleges and through the Department of Agriculture to settlers on irrigation projects, but we do not do any of that work ourselves.

Once in a great while we will do it on a completely reimbursable basis, but generally speaking we do not go in for that type of work. It is settler program work which we encourage, but they do it.

Mr. CURRAN. Mr. Chairman, that is all, except to place these papers in the record.

Mr. LARCADE. Are there any questions? Without objection, the papers shall be placed in the record at the end of today's proceedings.

(No response.)

Mr. LARCADE. Thank you very much, Mr. Tomlinson. This concludes the program for this morning. The committee will stand adjourned until 10 o'clock tomorrow morning.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., December 4, 1951.

Hon. ROBERT E. JONES, JR.,
Chairman, Special Subcommittee to Study Civil Works,
Committee on Public Works, House of Representatives,
Washington, D. C.

MY DEAR MR. JONES: Attached is a statement on the flood-control activities of the Department of the Interior which is submitted in answer to questions Nos. 1 and 2 of the list attached to your letter of October 19. This is being submitted at this time in accordance with your suggestion that we furnish parts of the requested material as it becomes available rather than awaiting the completion of replies to all of the inquiries which you have sent us.

We shall endeavor to supply you with the remainder of the material not later than December 15, in accordance with informal arrangements made between Mr. Charles Curren, your staff director, and Mr. Reginald C. Price, Director of our Division of Water and Power, who has been working closely on this matter with Mr. Curran.

Sincerely yours,

R. D. SEARLES,
Acting Secretary of the Interior.

DEPARTMENT OF THE INTERIOR FLOOD-CONTROL ACTIVITIES

The Department of the Interior as the conservation agency of the Government is vitally concerned with the control, conservation, and the development of the water resources of the Nation. The planning and development of water and related resources on a river basin-wide basis is an underlying policy of the Department, and such coordinated development of water resources involves flood control as a major factor. Practically all agencies of the Department are concerned or affected by the Federal flood-control programs.

BUREAU OF RECLAMATION

The Bureau of Reclamation has for many years been extensively engaged in flood-control activities through the development of multiple-purpose projects for the control and use of the water resources of the 17 western States. A major phase of water conservation in the West is the capture of floodwaters in storage reservoirs and their later release for irrigation and power development. Thus, the planning and construction of flood-control facilities in dams, reservoirs, canals and other structures are inherent in most major projects of the Bureau and have been so recognized by law. As a result, the Bureau has been successful in almost completely controlling flood damages on many western rivers.

Aside from the basic flood-control value of reservoirs and channels constructed primarily for irrigation or power, legislative authority for the construction of flood-control works is contained in many acts of Congress authorizing the construction of specific reclamation projects, and general legislation appears in section 9 (b) of the Reclamation Project Act of 1939 (August 4, 1939, 53 Stat. 1187). This section of reclamation law provides that the Secretary may make allocations of costs of new projects or divisions of projects to flood control, and operate such projects for flood control to the extent justified by the allocations. It also provides that he shall consult with the Chief of Engineers and the Secretary of War and may perform investigations and studies under cooperative agreements with the Secretary of War.

One of the most important multiple-purpose projects involving flood control constructed by the Bureau resulted from the Boulder Canyon Project Act of December 21, 1928, authorizing the construction of Hoover Dam on the Colorado River. This act specified that the dam would be used: First, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses; and, third, for power. Prior to the construction of Hoover Dam the Colorado River was subject to recurring destructive floods which made it a natural menace, of little value in an area of extreme need for the maximum conservation and control of a limited water supply. Since the completion of Hoover Dam in 1935, it has been recognized as a major achievement that there have been no more floods in the lower Colorado River. Further and more complete control and use of the Colorado have since been accomplished by the construction of Parker and Davis Dams below Hoover, and the continued improve-

ment of the channel and of levees protecting valuable properties and irrigation works. Further construction is now planned on the upper Colorado and tributaries looking forward to the maximum control and use of the waters of the entire river system.

The great Central Valley project in California, much of which has now been completed by the Bureau of Reclamation, was authorized in 1935 under provisions of the Emergency Relief Appropriation Act of 1935 and by subsequent legislation primarily for irrigation and power, but has as an important function increased flood protection for the valley. Two of the world's largest dams, Shasta on the Sacramento River, and Friant on the San Joaquin, control and conserve floodwaters on those streams for irrigation and power production. The Friant Dam was particularly successful in completely controlling the headwaters of the San Joaquin in the disastrous California flood of last year.

The multiple-purpose aspects of the Central Valley project, including its flood-control value, which may be considered illustrative of reclamation projects, are reflected in the allocations of cost for the original project as shown in the report of the Secretary of the Interior dated February 24, 1947, and reproduced as House Document No. 146, Eightieth Congress, first session, as follows:

Irrigation	$221,551,600
Power	104,143,600
Municipal water and industrial water	9,091,800
Navigation	18,083,000
Flood control	31,444,000
Total allocations	384,314,000

The first basin-wide approach to flood control by the Bureau of Reclamation was in the comprehensive plan for the conservation, control, and use of all the waters of the Missouri River Basin, printed as Senate Document 191 of the Seventy-eighth Congress. This plan was approved by the Congress in the Flood Control Act of 1944, after coordination with plans of the Army Corps of Engineers, and the Bureau is now authorized to construct over 100 dams and reservoirs for multiple-purpose use in the basin along with other reservoirs to be constructed by the Corps of Engineers as a joint undertaking on a basin-wide project. Thirteen of the reclamation dams in the Missouri Basin project are now completed or under construction. Six of these dams were initiated and four more expedited specifically by the Congress in a supplemental appropriation act following the disastrous 1947 floods in the basin, and the recent Kansas subbasin disaster has placed further emphasis on the urgency of the flood-control features of the project. These new Missouri Basin dams have already made a significant contribution to flood control in their restricted areas of the basin. The Heart Butte Dam on the Heart River near Mandam, N. Dak., functioned effectively last year in a severe flood on the Heart, and the Enders, Medicine Creek, and Bonny Dams in the Republican subbasin will, with the Trenton Dam nearing completion and the Harlan County Dam completed by the Corps of Engineers, afford effective protection on one of the most damaging tributaries of the Missouri.

In addition to the Colorado, Central Valley, and Missouri River Basins comprehensive water resources development plans have been or are being developed in all other major basins of the West, notably the Columbia, Arkansas, Red, Rio Grande, Weber, and Gulf Coastal River Basins. Flood control is important in each.

Although the control of floods by reservoir storage is the principal flood control activity of the Bureau of Reclamation, the Bureau does, under certain circumstances, provide other flood control measures. In the Rio Grande Valley channelization work to conserve water and to control river bed aggradation which causes adverse drainage conditions affecting irrigated lands also involves flood prevention. The extensive dredging and levee works being carried on along the lower Colorado River are essentially flood control measures to offset the change in river flow conditions created by construction of Hoover, Parker, and Davis Dams. Levies, channel and diversion works on the Klamath project are flood control in function to prevent inundation of lands reclaimed on that project.

The flood-control activities of the Bureau of Reclamation are coordinated closely with the activities of the Corps of Engineers. In practically all cases the Corps makes the studies and evaluations of flood damages and flood control benefits used by the Bureau in its reports and the Corps is consulted in respect to allocations of cost, reservoir capacities, and reservoir operations relating to flood control. Wherever reservoir storage capacity is allocated to flood control at a

Bureau project, the Secretary of the Army, as provided by section 7 of the Flood Control Act of 1944, prescribes regulations for the use of that storage.

The manner in which flood control in the western reclamation States can be successfully integrated with the basic needs for irrigation and low-cost hydro power has been so firmly established as to make it an important part of all river resources projects. In the arid States of the West, it is not only important to control seasonal floods, but to conserve flood flows and put them to beneficial use on the land and in industrial and domestic growth where economic development cannot proceed without more water. While many small single-purpose irrigation projects remain to be built and will always be in demand in expanding sections of the West, major projects are now required to take care of essntial needs. They must be engineered not only for irrigation or power but to control and utilize flood flows and to provide maximum beneficial use of our runoff for all purposes.

BUREAU OF LAND MANAGEMENT

One of the primary functions of the Bureau of Land Management is to administer the large areas of public domain. Unwise use of the land, particularly in past generations, both public and private, has depleted vegetative cover resulting in loss of ability of watershed lands to retain precipitation, thus aggravating downstream conditions and in accelerating man-induced erosion so that abnormally large quantities of silt are pouring into main river channels creating flood hazards and damages and filling reservoir structures. The Bureau of Land Management, through increasingly effective range management supplemented by range improvement and soil and moisture conservation programs, is endeavoring by a long-range program to reduce erosion and surface runoff and consequently to assist in the control of floods and stream sedimentation.

GEOLOGICAL SURVEY

The Geological Survey is the great basic data-collecting agency of Government in the field of natural resources. In cooperation with States and other Federal agencies it obtains and compiles the great bulk of basic data on stream flows which are essential to the development of flood-control plans and for the operation of flood-control structures. It also makes special studies and reports on the hydrologic aspects of important floods as well as conducting research and investigations in relation to flood flows, surface runoff, and ground water phenomena in general. Geological Survey also is the primary mapping agency of the Government, and its mapping activities and services are of fundamental importance in flood-control investigations as well as investigations for all other types of water-resources development. The Survey, in addition, makes exploratory investigations of proposed reservoir sites to evaluate the nature of underlying mineral deposits.

FISH AND WILDLIFE SERVICE

Although the activities of the Fish and Wildlife Service are not directly related to the control of floods, the Service does have an important interest and responsibility in relation to Federal flood-control programs. This relationship is set forth in section 2, Public Law 732, Seventy-ninth Congress, second session, which states:

"SEC. 2. Whenever the waters of any stream or other body of water are authorized to be impounded, diverted, or otherwise controlled for any purpose whatever by any department or agency of the United States, or by any public or private agency under Federal permit, such department or agency first shall consult with the Fish and Wildlife Service and the head of the agency exercising administration over the wildlife resources of the State wherein the impoundment, diversion, or other control facility is to be constructed with a view to preventing loss of and damage to wildlife resources, and the reports and recommendations of the Secretary of the Interior and of the head of the agency exercising administration over the wildlife resources of the State, based on surveys and investigations conducted by the Fish and Wildlife Service and by the said head of the agency exercising administration over the wildlife resources of the State, for the purpose of determining the possible damage to wildlife resources and of the means and measures that should be adopted to prevent loss of and damage to wildlife resources, shall be made an integral part of any report submitted by any agency of the Federal Government responsible for engineering surveys and construction of such projects."

Under this section, the Fish and Wildlife Service conducts investigations of all related projects for flood control in the programs of the Corps of Engineers,

Bureau of Reclamation, and other Federal agencies. As a result of these investigations, the effect of proposed projects on fish and wildlife are evaluated and measures are recommended for incorporation in the project in the interest of fish and wildlife protection and propagation.

NATIONAL PARK SERVICE

Similar to the Fish and Wildlife Service, the activties of the National Park Service are not directly related to the control of floods, but the Service does have important interests and responsibilities in Federal flood-control programs. These interests and responsibilities are twofold. The National Park Service has a broad interest in recreational development including measures to accommodate recreation at Federal water resource projects. In relation thereto, the Park Service conducts all recreation investigations and planning functions for the Bureau of Reclamation on its water resource development works and recommends measures for incorporation in the projects to provide for recreation use and for the protection and enhancement of recreation values. Further, it operates and maintains the recreational facilities at Bureau projects or arranges for their administration by local or State agencies. In relation to Corps of Engineers' projects, the National Park Service makes reconnaissance investigations and reports on recreation aspects and sometimes consults on the development of master recreation plans.

The other responsibility of the National Park Service concerns developments that affect the notional parks and monuments, which the Park Service administers in accordance with the congressional policies established for their preservation. The Service evaluates critically the effect of any proposed flood control projects that would lie within, or alter conditions within a national park or monument or other area of national scenic or recreation significance with a view to finding alternative solutions or otherwise avoiding adverse effects on these areas.

BUREAU OF MINES

The interest of the Bureau of Mines in flood-control activities is concerned principally with evaluation in cooperation with the Geological Survey of the mineral resources underlying proposed reservoir sites and with measures for their protection or exploitation.

BUREAU OF INDIAN AFFAIRS

The Bureau of Indian Affairs is concerned, of course, with all flood-control activities that affect the welfare of the Indians. The Bureau also constructs projects for the reclamation of Indian lands and where such projects include storage reservoirs flood control is usually involved as one of the multiple purposes served. The program of the Bureau of Indian Affairs in this respect, however, is minor.

POWER MARKETING AGENCIES

The Bonneville Administration, Southwestern Power Administration, and the Southeastern Power Administration are the power marketing agencies of the Department of the Interior and each markets for the Federal Government the surplus power generated at Corps of Engineers projects. While not directly interested in flood control, these agencies are interested in those related factors that affect power production and costs such as reservoir and river basin operations, capacity of storage reservoirs and allocations of storage space size and characteristics of power generating equipment, and cost allocations.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C.

HON. ROBERT E. JONES, JR.,
Chairman, Special Subcommittee, to Study Civil Works, Committee on on Public Works,
House of Representatives, Washington, D. C.

MY DEAR MR. JONES: With your letter of October 19, you submitted a list of 14 questions relating to the activities of this Department in the field of water resource development. In our letter of December 4, we transmitted a partial response to your inquiry.

Attached is the remainder of our response to your questions. We shall be pleased to provide you with any additional information you may require.

Sincerely yours,

OSCAR L. CHAPMAN,
Secretary of the Interior.

ANSWERS BY DEPARTMENT OF THE INTERIOR TO QUESTIONS SUBMITTED BY SUBCOMMITTEE TO STUDY CIVIL WORKS, COMMITTEE ON PUBLIC WORKS, HOUSE OF REPRESENTATIVES, DECEMBER 1951

Question No. 1

What bureaus or agencies of the Department carry on work directly related to flood control and river improvement for navigation?

Question No. 2

What is the nature of flood-control work undertaken by the Department?

The answers to these questions with respect to flood-control activities were transmitted to the subcommittee chairman in a letter dated December 4, 1951.

The answer with respect to navigation is as follows:

Navigation, where involved, has the same general relationship as flood control to the Interior Department's program of river-basin development. However, the interrelation between these programs and navigation is much less important and less frequent than in the case of flood control. The navigation functions of Interior projects consist primarily of: (1) use of reservoirs constructed by the Department for water transportation, and (2) release of water from these reservoirs during periods of low flow to improve downstream channel depths.

Particular mention should be made of the significant effects, beneficial and adverse, which navigation projects often have upon fish and wildlife resources with which the Fish and Wildlife Service is concerned. In the field of minerals and fuels, which are the concern of the Bureau of Mines and the Geological Survey, navigation projects often significantly affect the economics of mining; as for example, providing low-cost water transportation for coal in the upper Ohio Basin. Reservoir projects for navigation or other purposes, also affect minerals and fuels deposits either through flooding, making them unavailable for future economic use, or through making them more or less accessible because of reservoir construction.

Question No. 3

How are surveys for reclamation and other water resource development and conservation projects of the Department initiated?

Answer

Only two agencies of the Department, the Bureau of Reclamation and the Bureau of Indian Affairs, prepare survey reports for water development projects of the type generally prepared by the Corps of Engineers. This arises from the fact that, as a general rule, these two agencies in the Department are required to obtain specific project authorizations for water resources development either by Congress or by a finding of feasibility by the Secretary of the Interior. The other agencies of the Department have general legislative authority to carry on their resources activities. This is discussed more fully under the answer to Question 4.

BUREAU OF RECLAMATION

Nearly all surveys for projects of the Bureau of Reclamation are initiated under authority of the reclamation laws. This authority extends back to the original Reclamation Act of 1902. Section 2 of that act provides "That the Secretary of the Interior is hereby authorized and directed to make examinations and surveys for, and to locate and construct, as herein provided, irrigation works for the storage, diversion, and development of waters, including artesian wells."

Subsequent acts, particularly the Reclamation Act of 1939, have broadened the authority for investigations to include power, and municipal and industrial water supply and, as a related part of such investigations, flood control, navigation, and other allied purposes.

Investigations are initiated and scheduled in accordance with the needs of a continuing Reclamation program. They may also be initiated at the request of a State or local group in which case the interested party is required to contribute one-half of the investigations cost. Some investigations are initiated upon Congressional request or resolution.

Funds for investigations of the Bureau of Reclamation are provided from annual appropriations from the reclamation fund, the general fund, Colorado River development fund, and a special item for investigations in Alaska.

At the start of an investigation a one-page "Notice of initiation of investigation," containing basic information concerning the investigation, is prepared and circulated widely to Federal and State agencies and other interested parties. Circulation of this notice is the first step in a detailed procedure for coordinating investigations and the results thereof with other agencies in the Department, other Federal agencies, and the States. The coordinating facilities of the Interior Department field committees, the Federal Interagency River Basin Committee, and its regional committees in the Missouri, Columbia, Pacific Southwest, and Arkansas-White-Red Basins are used for this purpose.

Bureau of Indian Affairs

Surveys for water resource projects of the Bureau of Indian Affairs are initiated in a manner similar to that of the Bureau of Reclamation. The authority for the initiation of these surveys stems from the act of April 4, 1910, requiring preparation and submission of a report on the economic and engineering feasibility of a project before it may be authorized.

Prior to 1910, authority for investigations and surveys for the following Indian irrigation projects was found in acts of Congress as follows:

Colorado River and Yuma projects, April 21, 1904 (33 Stat. 224).
Uintah project, June 21, 1906 (34 Stat. 375).
Flathead project, April 30, 1908 (35 Stat. 83).
Fort Peck project, May 30, 1908 (35 Stat. 558).
Fort Belknap project, April 30, 1908 (35 Stat. 83).
Blackfeet project, March 1, 1907 (34 Stat. 1035).
Wind River project, March 3, 1905 (34 Stat. 334).
Fort Hall project, June 21, 1906 (34 Stat. 334).

Fish and Wildlife Service

The Fish and Wildlife Service initiates surveys for and constructs migratory waterfowl refuges and fish hatcheries. The Service also investigates the water resource projects of other agencies, both within and outside the Department of the Interior, in order to determine their effect on fish and wildlife resources.

Federal Migratory Waterfowl Refuges.—The Fish and Wildlife Service, as the administering agency for the Federal migratory waterfowl refuge program, is a user of water in the maintenance of marsh and aquatic habitat so necessary in the management of the refuge lands. This program involves the setting aside and development of sufficient nesting area to maintain adequate production, the development of resting and feeding areas along the routes of waterfowl migration to provide protection and feed for the millions of migrating waterfowl during the fall and spring, and to provide adequate wintering areas where the waterfowl spend from 4 to 6 months of each year.

The Fish and Wildlife Service has set up a program in which are indicated the general areas within the continental United States where gaps exist in the migratory waterfowl refuge program or where additional refuge areas are required. With this program at hand, staff members of the Service are continually on the lookout for refuge prospects in the areas where refuges are needed. Recommendations as to possible areas are also received from State game departments and from conservation groups and private individuals.

Upon being advised of a prospective area, the Fish and Wildlife Service makes a general reconnaissance to investigate the need for a refuge in that area, prospective size, general possibilities for development, acquisitions possibilities, and availability of water. If the report on this general reconnaissance is favorable, a detailed study is made to obtain more detailed information as to present and prospective waterfowl use, soil conditions which would permit the production of ample food supplies, hydraulic studies as to the availability of water of sufficient quantity and quality at the proper seasons, engineering studies from which construction plans could be prepared and land examination to determine approximate acquisition costs.

With this detailed information available, an estimate of the total cost of the project is made, and if value of the area for waterfowl in the judgment of the Fish and Wildlife Service is to exceed acquisition and development costs, the area is approved as an addition to the program. The approval of the establishment of

any Federal refuge is also sought from the game department of the State involved before actual acquisition and development is begun.

Federal Fish Hatcheries.—Surveys for construction of Federal fish hatcheries are sponsored by the Fish and Wildlife Service in some instances, but normally are made following public demand and congressional action. Hatchery needs are determined through surveys of management programs established either by the States or by the Fish and Wildlife Service. These management programs are arrived at by creel census data, information on productivity of the stream, and other factors connected with the use of the particular areas involved. Federal hatcheries are established in areas where the States are unable to provide sufficient facilities, generally by agreement with the States themselves or at their request, and secondly, to service public land areas for which the Federal Government is primarily responsible.

Investigation of water development projects of other agencies.—The amended Coordination Act of August 14, 1946 (60 Stat. 1080), authorizes the Fish and Wildlife Service to investigate water-resource-devolpment projects, proposed for construction by Federal agencies, or by other public or private agencies under Federal license, for the purpose of determining the possible damage to fish and wildlife resources. It further authorizes the service to recommend means and measures for preventing such damages or losses. The act provides that reports and recommendations of the Secretary of the Interior, based on the surveys and investigations of the Fish and Wildlife Service, shall be made an integral part of any report submitted by any Federal agency responsible for engineering surveys and construction of such projects.

The Fish and Wildlife Service initiates its investigations after notice has been received from a Federal construction or licensing agency that a water-development project is being proposed on a given stream. Such notices are provided for under the established coordination procedures discussed above. The Service obtains pertinent engineering data from the Federal or non-Federal agency planning the development and conducts field studies as needed. The biological investigations generally are completed in sufficient time to permit the inclusion of findings and recommendations in project reports issued by the Federal construction agencies, or to permit consideration of such findings and recommendations by the Federal licensing agency prior to issuance of licenses for non-Federal development.

National Park Service

The recreation aspects of surveys for reclamation and other water resources development and conservation projects are initiated by the National Park Service upon the specific request of the Bureau of Reclamation and the Corps of Engineers, under authority of the Historic Sites Act of August 21, 1935 (49 Stat. 666) and the Park, Parkway, and Recreation-Area Study Act of June 23, 1936 (49 Stat. 1894). In addition, the established coordination procedures enable the National Park Service to analyze the possible effect of water-development proposals upon national parks, monuments, and other areas under its jurisdiction and advise the proposing agency thereon. In connection with these individual project surveys, the National Park Service also initiates basin-wide recreation surveys to determine the pattern of recreation needs, within the framework of which the recreation developments at individual reservoir projects may be properly planned.

Bureau of Land Management

Surveys of conservation projects of the Bureau of Land Management (see answer to questions 1 and 2), are initiated by the official of the Bureau responsible for the maintenance of a particular area of public lands. The proposed projects are reviewed and passed upon by officials of the Bureau and the Department. The surveys are authorized by the Tayor Act of June 28, 1934 (48 Stat. 1275; 43 U. S. C., sec. 315m).

Bureau of Mines

Surveys of the effect of water resources development and conservation projects on mineral resources are undertaken upon specific request of the Bureau of Reclamation or the Corps of Engineers. Results of such surveys are made available to the requesting agency, and are used within the Department of the Interior in formulating a departmental position on the proposed development.

Question No. 4

How are water conservation and development projects authorized?

Answer

As pointed out under the answer to question No. 3, the Bureau of Reclamation and the Bureau of Indian Affairs are generally required to obtain specific project authorization, either by act of Congress or, in some instances in the Bureau of Reclamation, by a secretarial finding of feasibility. In addition, Federal fish hatcheries generally require specific congressional authorization. Individual water conservation and development projects of the other Interior agencies may generally be undertaken under general program authority already available to the agency.

Bureau of Reclamation

Projects of the Bureau of Reclamation are authorized either by an act of Congress or by a finding of feasibility, under criteria prescribed in the statutes, by the Secretary of the Interior. In both cases the authorization normally follows the preparation of a planning report on intensive engineering and economic investigations of the proposed project.

Authorization by act of Congress.—Legislation authorizing a project of the Bureau of Reclamation is either introduced by an interested Member of Congress or transmitted to the Congress as a proposal of the Administration.

Prior to project authorization, and as a part of the procedure leading toward it, planning reports on the project are submitted for review and comment to the various State and Federal agencies as provided by law and by the coordination procedures adopted by agreement among Federal agencies. Details of these coordinating procedures are included in several of the exhibits transmitted in answer to question No. 14.

After completion of review by other agencies and final adoption by the Secretary, the planning report, together with the comments received, is transmitted by the Secretary with his recommendations to the Bureau of the Budget for final review, pursuant to Executive Order 9384 and related delegations from the President. Following its review, the Bureau of the Budget advises the Department of the Interior as to the relation of the proposed project to the program of the President. After this advice is received, the proposal is ready for submission to the Congress.

Secretarial finding of feasibility.—Authority for the Secretary of the Interior to authorize a reclamation project which meets certain prescribed criteria and limitations is set forth in section 9 of the Reclamation Project Act of August 4, 1939 (53 Stat. 1187; 43 U. S. C. 485). The pertinent part of that section states:

"If the proposed construction is found by the Secretary to have engineering feasibility and if the repayable and returnable allocations to irrigation, power, and municipal water supply, or other miscellaneous purposes found by the Secretary to be proper, together with any allocation to flood control or navigation made under subsection (b) of this section, equal the total estimated cost of construction as determined by the Secretary, then the new project, new division of a project, or supplemental works on a project, covered by his findings shall be deemed authorized and may be undertaken by the Secretary."

A limitation on this authority is imposed by the Flood Control Act of December 22, 1944 (58 Stat. 887), which provides for authorization only by act of Congress in these cases where, upon referral of project plans and proposals to the affected States and Secretary of the Army for consideration as required by that act, objections to a project are raised by such reviewers.

Bureau of Indian Affairs

Water resources development projects of the Bureau of Indian Affairs may be authorized only by act of Congress. The act of April 4, 1910 (36 Stat. 270), requires that no project costing in excess of $35,000 may be undertaken for the development of Indian water resources until a report on its engineering and economic feasibility has been prepared and submitted to the Congress and until Congress has acted favorably upon the proposal.

The procedures for submitting such a project to the Congress are similar to those outlined above for projects of the Bureau of Reclamation which are authorized by Congress.

Fish and Wildlife Service

Refuges for migratory waterfowl are authorized when approved by the Director of the Fish and Wildlife Service following surveys and investigations noted in the answer to question No. 3.

Broad authority from Congress with respect to these refuges is contained in the Migratory Bird Conservation Act of February 18, 1929 (45 Stat. 1222; 16 U. S. C. 715), as amended, the Migratory Bird Hunting Stamp Act of March 16, 1934 (48 Stat. 450; 16 U. S. C. 718), as amended, and the Coordination Act of August 14, 1946 (60 Stat. 1080; 16 U. S. C. 661).

In cases where the normal requirements of refuge management under the acts cited above are unacceptable to the States involved, special acts of Congress, containing provisions permitting modification of these requirements, may be sought to authorize certain refuges.

Fish hatcheries normally are authorized by act of Congress. For example, the White Act of May 21, 1930 (46 Stat. 371), authorized a number of specified hatcheries. Legislation relating to the lower Columbia River Fisheries of May 11, 1938 (52 Stat. 345; 16 U. S. C. 1946 ed., 755), authorized a fish hatchery program limited only by an expenditure level. It was supplemented by the act of August 8, 1946 (60 Stat. 932; 16 U. S. C. 1946 ed., 756), removing that limitation.

Under this procedure, the Fish and Wildlife Service prepares data on the need for hatcheries and presents them to committees of the Congress.

In some cases, an interested Member of the Congress initiates action toward the authorization of a refuge or a hatchery during consideration by the Congress of an appropriation bill for the Department of the Interior. If he is successful, the development becomes authorized by incorporation in the appropriation bill as finally approved.

Facilities for protection of fish and wildlife resources included in projects of other agencies (viz, the Bureau of Reclamation and the Corps of Engineers) and facilities for the mitigation of damage to the resources, ordinarily are incorporated in the authorizations for such projects.

National Park Service

The preceding paragraph applies also to recreational facilities planned by the National Park Service in connection with projects of other agencies.

Bureau of Land Management

Conservation projects of the Bureau of Land Management (see answer to questions 1 and 2), are generally authorized by the Taylor Grazing Act of June 28, 1934 (48 Stat. 1275; U. S. C. sec. 315m) and by the National Soil Conservation Act of April 27, 1935 (49 Stat. 163; 16 U. S. C. 590a) as amended. Soil and moisture conservation projects are authorized by the Secretary's Office upon the recommendation of the Director of the Bureau of Land Management. Other Bureau of Land Management water resources projects are authorized when approved by the Director.

Question No. 5

What constitutes an authorized project?

Answer

As is evident from the answers to the previous questions, no single definition or description of an authorized project can be framed which would fit the diversity of projects and methods of authorization which occur with respect to the programs of the Department of the Interior. Projects range in size and complexity from simple, small, water impoundments on the public lands, to huge, complex systems of multiple-purpose developments. Accordingly, all that can be said is that an authorized project of an agency of the Department is one authorized by one of the actions outlined for that agency in the answer to question 4.

Question No. 6

What latitude for changes and modifications are considered to rest with the Administrator in carrying out the authorized project?

Answer

The authority of the Administrator to make the changes and modifications listed below for specific bureaus is limited further by the controls exercised within the Department, by the Bureau of the Budget, and by the Congress through the budgetary process and the securing of appropriations.

Bureau of Reclamation

The degree of latitude for changes and modifications to projects of the Bureau of Reclamation subsequent to authorization for construction varies on individual project basis, and is usually governed by the terms of the authorizing legislation or the Secretary's finding of feasibility.

The Commissioner of Reclamation imposed further administrative control in 1949 when he established a procedure requiring preparation and approval of a definite plan report for each project prior to construction. He then approves all project programs annually in advance, or by an interim change order procedure requiring his approval where any change in the scope of the work is involved. The authority of the Commissioner to approve changes or modifications is not generally restricted so long as he complies with reclamation law and the authorizing legislation. A majority of the projects authorized to date requires only that the project be constructed "substantially" in accordance with a report setting forth general and over-all objectives rather than specific and detailed structural plans. This is necessary in order to accommodate changed conditions or more detailed information obtained while the project is under construction.

In actual practice, however, the Commissioner clears proposed changes and modifications with the Secretary, the Bureau of the Budget and the Congress through the review of program schedules by those offices during the budget and appropriation process.

Changes or modifications of projects may not be made which exceed the feasibility or pay-out requirement of reclamation law, or which depart from the general over-all plan or objectives of the authorization. In such cases it is necessary to seek reauthorization of the project (see answer to question 8). In some cases authorizing legislation is restricted so that no major changes may be made that have a significant effect on the final project. In other cases, a project may be restricted only as to primary objectives and thus changes in engineering plans and designs necessary to meet those objectives may be made without higher administrative action or legislation.

The practical effect of reclamation law and special authorizing acts is to vest a desirable degree of latitude in the Commissioner insofar as changes in specific engineering plans and designs are concerned but to wholly restrict the over-all location and objectives of the project. Each project must be examined separately as to specific authority for changes.

Bureau of Indian Affairs

Few changes have been made in authorized projects of the Bureau of Indian Affairs. Minor modifications in projects may be approved by the Commissioner of Indian Affairs. Proposals for major changes require preparation of a revised report and approval by the Secretary, the Bureau of the Budget, and the Congress.

Fish and Wildlife Service

Within the general objectives of the Migratory Bird Conservation Act, certain fish hatchery legislation, and other provisions referred to, which objectives generally relate to the development of habitat for wildlife, including fish, there is no limitation on the changes or modifications considered necessary by the Director.

National Park Service

Within limits of the authorizing language, the Director has full latitude for making changes in recreational facilities constructed in connection with water resource projects.

Bureau of Land Mangement

The Director has complete latitude for changes of conservation projects, subject of course to limitations of the broad authorizing legislation and budgetary limitations.

Question No. 7

What administrative official approves such modifications?

Answer

The head of each bureau approves changes and modifications in carrying out authorized projects, subject to review by the Secretary, when such changes and modifications do not require congressional action (see answer to question No. 6). In some cases the bureau chiefs have delegated authority for approval of changes to subordinate officials, both in the field and in the headquarters office.

The bureau head determines, in the light of the significance of the change and other circumstances, whether to seek review by the Secretary.

Question No. 8

Under what circumstances is it considered necessary to obtain the approval of Congress for modifications in an authorized project?

Answer

Bureau of Reclamation

With respect to those projects of the Bureau of Reclamation which were originally authorized by secretarial findings of feasibility, congressional approval for modification is required if the change is such that the Secretary could not find the project, as modified, feasible under the Reclamation Project Act of 1939. If the modification consists of the addition of a new segment (technically called a division), or new supplemental works to the project and if that division or those works meet the standards of feasibility set down in the 1939 act, congressional approval is not required.

With respect to those projects which are originally authorized by act of Congress, approval by Congress of a change is required if a secretarial finding of feasibility cannot be made and if the modification is not within the scope of permissible deviation (this depending upon the specificity of the original authorizing act and the language used therein). If the modification of a project originally authorized by Congress consists of a new supplemental work or a new division which can meet the standards of the Reclamation Project Act of 1939, a secretarial finding of feasibility is permissible and, if made, further action by the Congress is not required.

Bureau of Indian Affairs

See answer to question No. 6.

Other Bureaus

Modifications in the authorized water-resource projects of the other bureaus of the Department normally are not of such a character as to require approval by the Congress. It should be noted, however, that these project modifications are subject to the usual congressional controls involved in the budgetary process and the securing of appropriations.

Question No. 9

What data are given to the authorizing committee or to the Appropriations Committee subsequent to authorization of the project and prior to its completion?

Answer

Bureau of Reclamation

The Appropriations Committees of both the House and the Senate are provided a complete and detailed report on each active project each year through the annual budget process. In addition to extensive oral hearings, this material includes complete construction schedules, maps, cost and estimated cost data, narrative descriptions and statements as to status of each project, and numerous special tables and reports on all activities.

Except for certain specific projects on which a report to Congress has been required by law, no regular or routine reports are made subsequent to authorization to the legislative committees of either the House or the Senate. However, progress reports, advice of major changes in progress, and related matters are frequently addressed by letter to the committee chairmen and to interested members of these committees. Numerous informal meetings have been held in the past with these committees at which Reclamation officials presented the status of Reclamation activities, and pending legislation provides frequent opportunity for the legislative committees to review Reclamation progress.

Bureau of Indian Affairs

Bureau of Land Management

Data on water resource projects of these bureaus are also provided annually to the Appropriations Committees of the House and Senate during the appropriations hearings. Data similar to those provided by the Bureau of Reclamation are furnished by these bureaus though the amount of detail required by the committees is somewhat less.

National Park Service

Fish and Wildlife Service

Inasmuch as the majority of the projects of the Fish and Wildlife Service and the National Park Service are prosecuted in accordance with broad, general, legislative authorizations, the furnishing of data to congressional committees usually occurs only in those instances where Congress is considering specific legislative authority for the construction and development of a project or a congressional committee requests specific information.

Question No. 10

What nature of public works for flood control, improvement of navigation, or development of hydroelectric power are authorized for development by the Department without reference to the Public Works Committee?

Answer

No public works designed exclusively for flood control or navigation or a combination of these purposes are authorized for construction by the Department of the Interior. In all cases where these functions are part of projects of this Department, they are combined with other functions such as irrigation, domestic water supply, preservation of fish and wildlife resources, recreational development, and others. Projects involving only development of hydroelectric power may be authorized by a secretarial finding of feasibility (see answer to question No. 4) or by act of Congress.

Projects of the Department of the Interior requiring congressional authorization which involve the purposes stated in the question are ordinarily considered by the Interior and Insular Affairs Committees. In a few cases, projects have been authorized by inclusion in appropriation acts on motion of interested Members of the Congress.

Normally, only such projects of the Department as are authorized in flood control or rivers and harbors acts are considered by the Public Works Committee. An exception is the recent proposal of the Department to construct steam plants in the Pacific Northwest, which was considered by the Public Works Committee as a separate item.

Question No. 11

What reporting procedures are used within the Department and the executive branch above the level of the constructing bureau in exercising control of the authorized programs?

Answer

It is assumed that the reporting procedures refer solely to the construction phase of the authorized programs, and do not include the investigation phases. Reporting procedures on the investigation phases are partially covered in discussion of and exhibits on the intradepartmental and interagency procedures for coordinating investigations.

Secretarial direction and supervision of the programs of the various agencies of the Department have been delegated to the Under Secretary and the Assistant Secretaries as follows:

Under Secretary:
- Bureau of Reclamation
- Bonneville Power Administration
- Southeastern Power Administration
- Southwestern Power Administration

Assistant Secretary for Public Land Management:
- Bureau of Land Management
- Fish and Wildlife Service
- National Park Service
- Bureau of Indian Affairs
- Office of Territories

Assistant Secretary for Mineral Resources:
- Division of Geography
- Division of Oil and Gas
- Bureau of Mines
- Geological Survey
- Defense Minerals Administration

The Under Secretary and Assistant Secretaries each has a staff division to assist him in carrying out his responsibilities. In addition the administrative Assistant Secretary exercises the authority of the Secretary on matters of budget and finance, personnel, property management, and general administrative management.

The Secretary also has a program staff reporting directly to him to assist in the formulation and execution of over-all departmental programs and policies on a regional and national basis.

Further description of organization of the Secretary's office and the Department as a whole is contained in the Official Organization Handbook of the Department which is included as one of the exhibits in answer to question 14.

Detailed reporting procedures at the departmental level have not been completely formalized and vary as between the offices of the Under Secretary and the Assistant Secretaries. In general, much reliance is placed upon frequent conferences by members of the secretariat with the bureau chiefs. In some instances, brief monthly progress reports of agency operations are used, and the usefulness of this device is now under study by the Department.

Bureau of Reclamation

Reporting procedures which are used within the Department to control authorized programs of the Bureau of Reclamation are largely fiscal in character.

A program for improvement of accounting and budget procedures was initiated in 1948 with participation by the Office of the Secretary of the Interior, the General Accounting Office, the Bureau of the Budget, and the Bureau of Reclamation. The purpose of this joint effort was to improve the accounting procedures and provide the means for better reporting and control of the programs for the Bureau of Reclamation.

As a result of the program, procedures were developed which resulted in control schedules and financial reporting procedures to reflect monthly progress on the features of projects included in the individual control schedules. While many of these procedures are used primarily at the bureau level, they are nontheless reporting procedures of the Department, and the data available from such reporting procedures are used by the Department, the Bureau of the Budget, and the House and Senate Committees on Appropriations in exercising control of the authorized programs.

Each year the budget is prepared through use of the control schedules, includind additional detailed supplemental schedules utilized in developing the program. Incorporated in the annual submission to the Bureau of the Budget are detailed control schedules supporting the estimate for each project. After the allowances by the Bureau of the Budget have been made the control schedules are adjusted accordingly. The revised schedules form the basis of the program which is considered annually by the Congress.

The schedules are again adjusted to conform to the actions taken by the Congress. These adjustments are checked by the Department to assure conformance with congressional action. The schedules are adjusted twice annually—after the Bureau of the Budget makes its allowances and after the Congress has acted and made appropriations available.

Whenever Congress authorizes program adjustments subsequent to its action, the Bureau must submit its proposed changes to the Department for approval before they may be effected.

Fiscal reports are submitted monthly. They indicate status relative to the goals incorporated on the control schedules. These reports are made to the Commissioner, Bureau of Reclamation, who transmits them to the Secretary's office. The Department has participated in the development of these procedures, and the schedules and reports are available to the Secretary's office at all times for checking adherence to the program. It is incumbent upon the Bureau of Reclamation to call to the attention of the Department any proposed changes in program within the scope of congressional authorization relative to program adjustments.

Other Agencies

Although the problems of other agencies in the Department differ in scope and complexity from those of the Bureau of Reclamation, similar procedures for program control are in effect.

Improvement in budgeting and reporting procedures for all agencies are under continued study by the Department in cooperation with the General Accounting Office, the Bureau of the Budget and the agencies concerned.

Along with these procedures, submission to the Bureau of the Budget of apportionments of funds available is required after appropriations are made in accordance with the Antideficiency Act. Also, monthly reports are submitted on the status of appropriation accounts. Thus fund control is maintained by the Department through the apportionment of appropriations by the approval of allotments by budgeted activities.

Missouri River Basin

A special reporting procedure exists for the Department-wide program for the development of the water and related resources of the Missouri River Basin. A monthly progress report is prepared for the total Departmental program in the basin by the Missouri Basin Field Committee whose chairman is the Secretary's representative in the region. These reports are made available to all of the bureaus and to the secretariat of the Department for program control purposes.

Other Regions

To some extent, the regional program reports prepared annually by the Departmental Field Committees for Alaska, the Pacific Northwest, Colorado-Great Basin, Southwest, and Missouri River Basin regions, provide a means of reporting progress toward achieving objectives and goals established for the authorized program.

Question No. 12

What additional steps in the authorization procedure would the Department suggest being initiated?

Question No. 13

What existing steps would the Department recommend being eliminated without loss of necessary and proper control?

Answer

Answers to these questions are currently being considered by a Departmental task force appointed to analyze the report of the President's Water Resources Policy Commission. That report contained several recommendations related to these questions. At the present time, the task force is working with other Federal agencies, under the sponsorship of the Bureau of the Budget, in a joint study of the Commission's report.

The Department has not yet adopted a position with respect to these questions; such a position will be determined after the conclusion of the analyses and studies noted above.

Question No. 14

Provide a copy of any generalized policy and procedural instructions for the conduct of surveys and for the development of water resource improvement and conservation projects.

Answer

There are being transmitted with this submittal copies of manuals and instructions on policy and procedure relating to the conduct of surveys issued by the following bureaus:

Department of the Interior: Official Organization Handbook, Department of the Interior.

Bureau of Reclamation: Reclammation Manual, volumes III and VII.

Bureau of Indian Affairs: Bureau of Indian Affairs Manual, volume V, part VI, chapters 4, 5, 6 and 7.

Fish and Wildlife Service:

(1) Instruction No. 1311 on selection of Refuge Areas.

(2) General Information on the Conduct of River Basin Studies.

National Park Service:

(1) Instructions of June 5, 1947, governing preparation of reports . . . for Bureau of Reclamation and Corps of Engineers reservoir sites.

(2) Memorandum of July 21, 1947, on departmental policy on recreation sites at reservoirs of the Bureau of Reclamation.

(3) Memorandum of April 30, 1948, supplementing (2) above.

(4) Departmental Order No. 2618 of February 21, 1951, relating to water reseource investigations in national part, momuments, wildlife refuges, and wilderness areas.

(5) Policy statement on archaeological salvage and the preservation of historic remains.

Bureau of Land Management: Definitions of activities and practices, soil and moisture conservation program, Department of the Interior.

Other pertinent policy and procedual instructions, relating to coordination of planning reports, are contained in a document entitled "Policies and Procedures for Distribution and Coordination of Reports by Agencies Represented on the Federal Inter-Agency River Basin Committee, Revised April 1951." The Department of the Interior, as a member of the Federal Inter-Agency Committee, adheres closely to these policies and procedures. A copy of this document is also transmitted with this submittal.

DEPARTMENT OF STATE,
Washington, D. C. November 19, 1951.

Hon. ROBERT E. JONES, Jr.,
Chairman, Special Subcommittee To Study Civil Works,
House Committee on Public Works, House of Representatives.

MY DEAR MR. JONES: This is with further reference to your letter of October 20, 1951, requesting certain information with respect to the work of the International Joint Commission, United States and Canada, and the work of the International Boundary Commission, United States and Mexico. Copies of the questionnaire supplied with your letter were transmitted to the United States Sections of the two Commissions with a request for such data as might appear pertinent.

The Department is in receipt of the following information supplied, November 6, 1951, by the Honorable A. O. Stanley, Chairman, United States Section, International Joint Commission, United States and Canada:

"The International Joint Commission under the terms of the boundary waters treaty of January 11, 1909, is vested with certain controls over the levels and uses of boundary waters: in waters flowing from boundary waters or in waters at a lower level than the boundary in rivers flowing across the boundary.

"The preliminary article of this treaty defines such boundary waters as:

" 'For the purposes of this treaty boundary waters are defined as the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or the waters of rivers flowing across the boundary.'

"Article III states the conditions under which structures affecting the levels of such waters must be approved by this Commission.

" 'It is agreed that * * * no further or other uses or obstructions or diversions, whether temporary or permanent, of boundary waters on either side of the line, affecting the natural level or flow of boundary waters on the other side of the line, shall me made except by authority of the United States or the Dominion of Canada within their respestive jurisdictions and with the approval, as hereinafter provided, or a joint commission, to be known as the International Joint Commission.'

"It is further provided in article IV of this treaty that:

" 'The high contracting parties agree that, except in cases provided for by special agreement between them, they will not permit the construction or maintenance on their respective sides of the boundary of any remedial or protective works or any dams or other obstructions in waters flowing from boundary waters or in waters at a lower level than the boundary in rivers flowing across the boundary, the effect of which is to raise the natural level of waters on the other side of the boundary unless the construction or maintenance thereof is approved by the aforesaid International Joint Commission.'

"Article VIII of the treaty establishes priorities in the use of boundary waters, provides for their equitable division between the two countries and in certain cases for the adequate indemnification of parties damaged or affected by such uses, viz:

" 'The International Joint Commission shall have jurisdiction over and shall pass upon all cases involving the use or obstruction or diversion of the waters with respect to which under articles III and IV of this treaty the approval of this Commission is required, and in passing upon such cases the Commission shall be governed by the following rules or principles which are adopted by the high contracting parties for this purpose:

" 'The high contracting parties shall have, each on its own side of the boundary, equal and similar rights in the use of the waters hereinbefore defined as boundary waters.

" 'The following order of precedence shall be observed among the various uses enumerated hereinafter for these waters, and no use shall be permitted which tends materially to conflict with or restrain any other use which is given preference over it in this order of precedence:

" '(1) Uses for domestic and sanitary purposes;

" '(2) Uses for navigation, including the service of canals for the purposes of navigation;

" '(3) Uses for power and for irrigation purposes.'

"This article further provides that:

" 'In cases involving the elevation of the natural level of waters on either side of the line as a result of the construction or maintenance on the other side of remedial or protective works or dams or other obstructions in boundary waters or in waters flowing therefrom or in waters below the boundary in rivers flowing across the boundary, the Commission shall require, as a condition of its approval thereof, that suitable and adequate provision, approved by it, be made for the protection and indemnity of all interests on the other side of the line which may be injured thereby.'

"As will be seen from the foregoing excerpts, this Commission's prime concern is not so much with the character, extent, cost, or form of construction of internal improvements in either the United States or Canada as with their effect upon international relations.

"As stated in the treaty, no such uses or obstructions are permissible—

" '* * * except by authority of the United States or the Dominion of Canada within their respective jurisdictions and with the approval, as hereinafter provided, of a joint commission, to be known as the International Joint Commission.'

"As a rule, such proposed improvements having been found advisable, as a matter of public convenience or necessity by either country, are then referred to this Commission for a study of their international effect and for our formal approval.

"This Commission can, as you know, be called upon to act in an advisory capacity in the determination of practically all questions [particularly those relating to boundary waters] arising between the two nations or their nationals, article IX of the treaty providing in part that:

" 'The high contracting parties further agree that any other questions or matters of difference arising between them involving the rights, obligations, or interests of either in relation to the other or to the inhabitants of the other, along the common frontier between the United States and the Dominion of Canada, shall be referred from time to time to the International Joint Commission for examination and report, whenever either the Government of the United States or the Government of the Dominion of Canada shall request that such questions or matters of difference be so referred.' "

If for any reason you desire additional or more detailed information, you may care to address the United States Section of the International Joint Commission, Room 2300, Federal Security Building, Washington 25, D. C.

As soon as the requested information is received from the United States Section, International Boundary and Water Commission, United States and Mexico, it will be promptly transmitted to you.

Sincerely yours,

BEN H. BROWN, JR.,
Acting Assistant Secretary,
(For the Acting Secretary of State).

DEPARTMENT OF STATE,
Washington, D. C., December 13, 1951.

Hon. ROBERT E. JONES, Jr.,
Chairman, Special Subcommittee To Study Civil Works,
House Committee on Public Works, House of Representatives.

MY DEAR MR. JONES: Reference is made to your letter dated October 20, 1951, requesting information with respect to flood control and improvements for navigation purposes so far as it concerns the International Boundary and Water Commission, United States and Mexico, and the International Joint Commission, United States and Canada.

Supplementing the Department's letter of November 19, 1951, transmitting information furnished by the Honorable A. O. Stanley, Chairman, United States Section, International Joint Commission, United States and Canada, there is now enclosed a copy of a letter dated November 16, 1951, from the Honorable L. M. Lawson, United States and Mexico, which contains the information sought by questions Nos. 1 through 10 and question No. 14 set forth in one of the enclosures to your letter under reference insofar as they concern the International Boundary and Water Commission, United States and Mexico.

With respect to questions Nos. 11 through 13, so far as they concern the International Boundary and Water Commission, the Department is pleased to inform you as follows:

Question No. 11

What reporting procedures are used within the Department and the executive branch above the level of the constructing bureau in exercising control of the authorized programs?

The United States Commissioner submits fiscal reports monthly. Copies thereof are transmitted to the Bureau of the Budget. In the event of any apparent digression from the approved policy or from the purpose of any appropriation, instructions could and would be issued by this Department to the United States Commissioner.

Article 25 of the water treaty of 1944 requires that decisions of the Commission shall be recorded in the form of minutes and that copies thereof shall be forwarded to each Government within 3 days after being signed. Except where the specific approval is required by any provision of the treaty, if one of the Governments fails to communicate to the Commission its approval or disapproval of a decision within 30 days from the date of the minute in which it shall have been pronounced, the minute in question and the decision which it contains shall be considered to be approved by that Government. The Commission is required by the treaty to execute the decisions that are approved by the two Governments. Either through conditional approval or disapproval of the minutes, this Department is enabled to maintain strict control over construction programs.

It is provided in article 2 of the water treaty of 1944 that whenever there are provisions in the treaty for joint action or joint agreement by the two Governments or for the furnishing of reports, studies or plans to the two Governments or similar provisions, it shall be understood that the particular matter in question shall be handled by or through the Department of State of the United States and the Ministry of Foreign Relations of Mexico. If a project of the kind covered by this provision is undertaken the other interested departments and agencies are consulted and the agreements concluded in regard thereto provide the measure of control deemed necessary.

Question No. 12

What additional steps in the authorization procedure would the Department suggest being initiated?

Considering that construction projects not covered by the water treaty of 1944 are substantially completed and considering further that only those projects which the Senate stated in its resolution giving its advice and consent to the ratification of the water treaty of 1944 may be built without the prior approval of the Congress, it is the view of this Department that no additional steps in the authorization procedure need be initiated.

Question No. 13

What existing steps would the Department recommend being eliminated without loss of necessary and proper control?

The Department knows of no existing steps which it could recommend for elimination without loss of necessary and proper control. This results from the fact that with a view to the orderly functioning of the United States section under the several treaties and the legislation which has been enacted, the Department has sought to simplify the procedures to the fullest extent possible.

There are enclosed for your information copies of the memoranda of understanding between the Department of State and the Department of the Interior as to functions and jurisdiction of agencies of the United States in relation to the Colorado and Tijuana Rivers and the Rio Grande below Fort Quitman, Tex., under the water treaty signed at Washington February 3, 1944 (dated February 14, 1945), and a copy of a letter dated October 25, 1945, from Sec-

retary Byrnes to the United States Commissioner, with memorandum from the President dated October 3, 1945, both of which are referred to by the United States Commissioner in connection with question No. 14.

Sincerely yours,

BEN H. BROWN, Jr.,
Acting Assistant Secretary
(For the Acting Secretary of State).

INTERNATIONAL BOUNDARY AND WATER COMMISSION,
UNITED STATES AND MEXICO,
UNITED STATES SECTION,
November 16, 1951.

JACK B. TATE, Esq.,
Deputy Legal Adviser,
Department of State,
Washington, D. C.

DEAR MR. TATE: Reference is made to your letter dated October 26, 1951, transmitting copies of a letter dated October 20, 1951, and other communications from Chairman Robert E. Jones, Jr., of the Subcommittee to Study Civil Works. In accordance with your request, I am pleased to furnish the following statements for possible assistance to the Department in answering the specific questions submitted by the subcommittee relating to this Commission:

Question No. 1

What commissions or agencies of the Department carry on work directly related to domestic flood control and river improvement for navigation?

You will, of course, want to include the International Boundary and Water Commission, United States and Mexico, in the Department's reply to the subcommittee.

Question No. 2

What is the nature of such work undertaken by the Department?

Such work undertaken through this Commission is limited to flood-control problems of an international nature and requiring joint action by the two Governments. Since there is no commercial navigation or other navigation of importance of the international streams within the Commission's jurisdiction, none of the Commission's work is directly related to navigation.

The Commission's flood-control work consists of the following:

(*a*) *Colorado River.*—(1) Studies, investigations and the preparation of plans for submission to the two Governments, and later construction, operation, and maintenance, through the respective sections of the Commission, of flood-control works on the lower Colorado River between Imperial Dam and the Gulf of California, pursuant to article 13 of the water treaty. This work is in the studies and investigations stage with the expectation that a report will be submitted to the two Governments in 1952 with recommendations as to the works that should be built.

(2) Works required to protect United States lands against damage from such floods as might result from the construction, operation, and maintenance of the main Mexican diversion structure (Morelos diversion dam) on the Colorado River. Such flood-protective works within the United States upstream from the Morelos diversion dam are now being constructed pursuant to plans agreed upon by the Commission. Actual construction is being performed by the Bureau of Reclamation and the cost of the works attributable to the Morelos diversion dam is being borne by the Mexican Government.

(*b*) *Rio Grande*

(1) Development of the Rio Grande international dams project, as provided for by article 5 of the water treaty, one of the principal purposes of which is to provide additional flood control.

(2) Studies, investigations, and preparation of plans for submission to the two Governments for flood-control works, other than those referred to in article 5 of the treaty, on the Rio Grande between Fort Quitman and the Gulf of Mexico, and the later construction, through the respective sections of the Commission, of such works as may be approved by the two Governments. This work, provided for by article 6 of the treaty, is in the studies and investigations stage.

(3) Development of the lower Rio Grande flood-control project, pursuant to special agreement between the two Governments by exchange of notes in 1932. This project is now substantially completed except for the construction of a joint flood-diversion dam which is under consideration by the two Governments. The project tends to stabilize the international boundary and now affords substantial flood-control benefits to highly developed lands on both sides of the lower Rio Grande Valley. Upon completion of the project and Falcon Dam of the Rio Grande international dams project, a large measure of flood protection will be provided to these areas.

(4) The Rio Grande rectification project, a joint undertaking by the two Governments through their respective sections of the Commission, pursuant to the treaty of February 1, 1933, consists of the rectification of the Rio Grande between El Paso, Tex., and Quitman Canyon. This project, substantially completed, eliminates a serious flood hazard to the cities of El Paso, Tex., and Ciudad Juarez, Mexico, provides incidental irrigation, drainage, and flood-protection benefits to large areas of valley lands in the two countries, and stabilizes the international boundary.

(*c*) *Tijuana River.*—Studies and and investigations and submission of recommendations to the two Governments regarding the equitable distribution between the two countries of the waters of the Tijuana River system, and plans for storage and flood control, pursuant to article 16 of the water treaty. This work is in the studies and investigations stage.

(*d*) *Nogales flood-control project.*—This project, developed in 1932 pursuant to a special agreement between the two Governments, provides flood protection to the border cities of Nagoles, Ariz., and Nogales, Sonora. The project was substantially completed in 1949, there remaining only the supplemental construction by the United States of a small flood-control dam.

(*e*) *Santa Cruz River.*—Studies and investigations are being made by the two sections of the Commission, pursuant to articles 3 and 24 of the water treaty, to develop recommendations to the two Governments for conservation and equitable distribution of international waters of the Santa Cruz River, a part of the Colorado River system. The international portion to which the Commission's studies relate is in the southern part of Arizona and the northern part of Sonora and is the principal source of the domestic water supplies for Nogales, Ariz., and Nogales, Sonora, as well as for irrigated lands. Any conservation measures that may ultimately be found to be feasible will doubtless provide some measure of flood protection in both countries.

It should be emphasized that the foregoing work of the Commission relates only to waters of the international streams and that neither the Commission nor this section has any jurisdiction over the internal distribution of the United States share of the waters of these streams.

Question No. 3

How are surveys for water resources development and conservation projects of the Department initiated? In connection with the reply to this question and related questions following, it is desired that if procedures by the various commissions are markedly different, the answers to the questions be grouped by commission so that a proper sequence will be obtained.

We assume that this question relates to "how" in the sense of authorization, rather than to administrative technique.

Practically all studies, investigations, and surveys concerning water resources development and conservation projects of the International Boundary and Water Commission, United States and Mexico, are initiated under specific articles of the Water Treaty of 1944, as follows:

(*a*) *Article 6.*—"The Commission shall study, investigate, and prepare plans for flood-control works, where and when necessary, other than those referred to in article 5 of this treaty, on the Rio Grande (Rio Bravo) from Fort Quitman, Tex., to the Gulf of Mexico."

(*b*) *Article 7.*—"The Commission shall study, investigate, and prepare plans for plants for generating hydroelectric energy which it may be feasible to construct at the international storage dams on the Rio Grande (Rio Bravo)."

(*c*) *Article 12* (*a*).—"* * * Regardless of where [the main Mexican] diversion structure is located, there shall simultaneously be constructed such levees, interior drainage facilities, and other works, or improvements to existing works, as in the opinion of the Commission shall be necessary to protect lands within the United States against damage from such floods and seepage as might result from the construction, operation, and maintenance of this diversion

structure. These protective works shall be constructed, operated, and maintained at the expense of Mexico by the respective sections of the Commission, or under their supervision, each within the territory of its own country."

(*d*) *Article 13.*—"The Commission shall study, investigate, and prepare plans for flood control on the lower Colorado River between Imperial Dam and the Gulf of California, in both the United States and Mexico, and shall, in a minute, report to the two Governments the works which should be built, the estimated cost thereof, and the part of the works to be constructed by each Government."

(*e*) *Article 16.*—"In order to improve existing uses and to assure any feasible further development, the Commission shall study and investigate, and shall submit to the two Governments for their approval:

"(1) Recommendations for the equitable distribution between the two countries of the waters of the Tijuana River system;

"(2) Plans for storage and flood control to promote and develop domestic, irrigation, and other feasible uses of the waters of this system;

"(3) An estimate of the cost of the proposed works and the manner in which the construction of such works or the cost thereof should be divided between the two Governments;

"(4) Recommendations regarding the parts of the works to be operated and maintained by the Commission and the parts to be operated and maintained by each section."

(*f*) *Article 24.*—"The International Boundary and Water Commission shall have, in addition to the powers and duties otherwise specifically provided in this treaty, the following powers and duties:

"(a) To initiate and carry on investigations and develop plans for the works which are to be constructed or established in accordance with the provisions of this and other treaties or agreements in force between the two Governments dealing with boundaries and international waters; to determine, as to such works, their location, size, kind, and characteristic specifications; to estimate the cost of such works; and to recommend the division of such costs between the two Governments, the arrangements for the furnishing of the necessary funds, and the dates for the beginning of the works, to the extent that the matters mentioned in this subparagraph are not otherwise covered by specific provisions of this or any other treaty."

Surveys concerning water resources development and conservation projects, other than those specifically authorized by the water treaty and/or before that treaty became effective, were initiated as follows: Those in connection with the development of the lower Rio Grande flood-control project, pursuant to special agreement between the two Governments concluded by an exchange of notes in 1932. Surveys in connection with the rectification project were made pursuant to instructions from the two governments and the later treaty of February 1, 1933. Surveys in connection with the Rio Grande canalization project and the American Dam and Canal, domestic projects of the United States section having a direct bearing upon international water problems, were undertaken pursuant to the act of August 19, 1935 (49 Stat. 660; amended 49 Stat. 1370).

Question No. 4

How are water conservation and development projects authorized?

Each water conservation and development project, involving international waters, carried out by the International Boundary and Water Commission, United States and Mexico, is specifically authorized by an existing treaty or other agreement between the United States and Mexico. The domestic projects of the United States section having a direct bearing on problems involving international waters—the Rio Grande canalization project and the American Dam—are specifically authorized in advance by acts of the Congress (act of Aug. 29, 1935, 49 Stat. 961, and act of June 4, 1936, 49 Stat. 1463).

Question No. 5

What constitutes an authorized project?

An authorized project, insofar as the United States section of the International Boundary and Water Commission, United States and Mexico, is concerned, is a project which has been approved in advance by Congress through a specific act or is set forth as an existing treaty obligation of the United States. In addition, as in the case of the act of September 13, 1950 (Public Law 786, 81st Cong.), the Congress sets forth in precise detail the functions which the Secretary of State, acting through the United States Commissioner, performs in carrying out the obligations existing under treaties with Mexico.

Questions Nos. 6 and 7

What latitude for changes and modifications are considered to rest with the administrator in carrying out the authorized projects?

What administrative official approves such modifications?

Latitude for changes and modifications that would affect the basic concept or purpose of a treaty-authorized project does not exist, except by mutual agreement of the Governments of the United States and Mexico. When a treaty project is involved, and no provision is made for modification at lower than the Government-to-Government level, changes can be effected only after Presidential approval, by and with the advice and consent of the Senate.

Changes and modifications that involve matters of engineering, design, construction, or other technical questions are effected by mutual agreement entered into by the Commissioners subject, in most cases, to the approval of the two Governments, expressed by or through the Secretary of State of the United States and the Minister of Foreign Relations of Mexico.

Question No. 8

Under what circumstances is it considered necessary to obtain the approval of Congress for modifications in an authorized project?

When an authorized project represents an existing treaty obligation of the United States, any basic change in purpose or concept of whatever nature would constitute a circumstance in which the approval of Congress would be required. Modifications of treaty projects that involve technical matters of specific location, engineering, design or other technical considerations do not require congressional approval.

Question No. 9

What data are given to the authorizing committee or to the appropriations committee subsequent to authorization of the project and prior to its completion?

Each year, full reports are furnished the subcommittees of the Committees on Appropriations of both the House and Senate. (Departments of State, Justice, and Commerce). These reports include:

(1) Direct testimony by responsible officials of the United States section.
(2) Progress reports on construction.
(3) Cost data reports.
(4) Contractors' earnings reports.
(5) Financial reports and budget estimates.

Question No. 10

What nature of public works for flood control, improvement of navigation, or development of hydroelectric power directly affecting boundary waters, are authorized for development by the Department without reference to the Public Works Committee?

It should be observed that:

(*a*) All programs, projects, and activities of the United States Section of the International Boundary and Water Commission, United States and Mexico, are limited to activities having international character.

(*b*) The Commission is an international body; the two Commissioners are responsible respectively to the Secretary of State of the United States and the Minister of Foreign Relations of Mexico.

(*c*) The Department of State and the Department of the Interior, recognizing their respective responsibilities in relation to public works affecting international waters, entered into a memorandum of understanding, dated February 14, 1945. This agreement was approved by the President on June 18, 1945.

The above three points are cited to indicate that the work of the Department of State, through the United States Section of the Commission, is international in nature; consequently, authorization of projects of public works for flood control, improvement of navigation, or development of hydroelectric power affecting boundary waters has not been considered to fall within the same category as similar projects involving purely domestic considerations or agencies. Therefore, in view of the international character of these works, relations with Congress have always been by and through the Foreign Relations Committee of the Senate, the Foreign Affairs Committee of the House, and/or the Appropriations Committees of the two branches of Congress.

You will undoubtedly wish to revise this language to accommodate the Department's answer relative to similar or related works performed by or through other commissions or agencies.

Question No. 11

What reporting procedures are used within the Department and the executive branch above the level of the constructing bureau in exercising control of the authorized programs?

This would appear to be a question for answer by the Department.

Questions Nos. 12 and 13

What additional steps in the authorization procedure would the Department suggest being initiated?

What existing steps would the Department recommend be eliminated without loss of necessary and proper control?

The Department will wish, of course, to give consideration to any possible over-all need for instituting additional steps in the authorization procedure and the possibility of eliminating any existing steps without loss of proper control. We have no recommendations to make relative to either question.

We should like to observe, however, that present authorization procedures and controls are entirely satisfactory from our standpoint. The water treaty of 1944, other existing treaties and agreements, and the various specific congressional acts set forth the intent of Congress in giving its policy approval to the joint public works program with Mexico on the international boundary. Also, our annual request for funds, with review by the Bureau of the Budget, provides the medium for consistent and systematic examination of our programs. Finally, understanding (*a*) of the Senate resolution of ratification of the treaty of 1944 specifically provides in part: "That no commitment for works to be built by the United States in whole or in part at its expense, or for expenditures by the United States, other than those specifically provided for in the treaty, shall be made by the Secretary of State of the United States, the Commissioner of the United States section of the International Boundary and Water Commission, the United States section of said Commission, or any other officer or employee of the United States, without prior approval of the Congress of the United States."

Question No. 14

Provide a copy of any generalized policy and procedural instructions for the conduct of surveys and for the development of water resource improvement and conservation projects.

The Department may wish to transmit to the subcommittee copies of the following documents:

(*a*) Memorandum of understanding as to functions and jurisdiction of agencies of the United States in relation to the Colorado and Tijuana Rivers and the Rio Grande below Fort Quitman, Tex., under water treaty signed at Washington, February 3, 1944 (dated February 14, 1945).

(*b*) Letter dated October 25, 1945, from Secretary Byrnes to the United States Commissioner, with memorandum from the President dated October 3, 1945.

These documents provide general policy and procedural instructions for the Commissioner in carrying out the provisions of the water treaty of 1944.

We hope the information furnished will be of assistance to the Department. If we can be of assistance in any other manner, please advise. It will be appreciated if you will kindly furnish me with a copy of the Department's formal reply to the subcommittee.

Sincerely yours,

L. M. LAWSON, *Commissioner.*

OCTOBER 25, 1945.

The Honorable L. M. LAWSON,
American Commissioner, International Boundary Commission, United States and Mexico, El Paso, Tex.

MY DEAR MR. LAWSON: Enclosed for your information and guidance is a copy of a memorandum dated October 3, 1945, from the President, regarding certain principles which are to govern the cooperation between the United States Section of the International Boundary and Water Commission and other agencies of this Government in construction and other activities and functions under the water treaty with Mexico, signed on February 3, 1944, and the protocol thereto, signed on November 14, 1944. This treaty has now been approved by the Mexican Senate and is expected to enter into force in the near future by the exchange of ratifications.

It will be noted that the President's memorandum, which provides for my issuance to the United States Commissioner of instructions based on the principles set forth therein, does not contemplate any diminution of this Department's or the Commissioner's responsibility or authority under the treaty and the protocol. In connection with the instructions communicated to you herein and such additional instructions as may become necessary from time to time, the Department desires that it be borne in mind that the treaty is an international undertaking, the success of which depends upon the fullest possible cooperation of the two Governments, and that in all questions of an international nature arising in connection with the treaty the views and preferences of the two Governments must be given equal weight. It is essential, therefore, that it be clearly understood that cooperation by other agencies of the Government in the discharge of treaty functions implies no diminution of the authority and responsibility of the United States Section and of this Department under the treaty.

It will be noted also that the principles set forth by the President in respect of cooperation by other agencies of this Government are in effect the same is those which have been tentatively agreed upon in your discussions with officials of the Department regarding policies and procedures for giving effect to the provisions of the treaty and the protocol, the memorandum of understanding with the Department of the Interior, and pertinent legislation. Pursuant to these discussions and in line with the President's memorandum, you are instructed as follows:

(1) The treaty authorizes the construction of various international works and the investigation and study of various problems and obligates this Government to participate in the performance of certain international functions. While the treaty itself, together with the protocol, will constitute the basic authority under which such work, studies, and functions will be performed, it may be necessary or desirable to secure supplementary authorizing legislation to implement or facilitate the performance of treaty functions. Accordingly, you are requested to give this matter careful study, and to submit for the consideration of the Department a draft of such enabling legislation as you may consider necessary or desirable.

(2) As soon as the treaty enters into force and the necessary appropriations become available to the Department for expenditure by your section of the Commission, you are instructed to undertake, in collaboration with the Mexican Section of the Commission, the investigations and studies: the planning, designing, and construction of the international works; and the performance of the other functions authorized by the treaty.

(3) In the design of the multiple-purpose storage dams and reservoirs on the Rio Grande and, where appropriate, of other major international construction projects, you will utilize the services of the Corps of Engineers, the Bureau of Reclamation, and such other Government agencies as may have adequate organizations or facilities for the purpose, to such extent as may be feasible consistent with our international obligations and the necessity for complete cooperation with the Mexican Section of the Commission. Such services will be procured under the provisions of section 601 of the Economy Act, by agreement with the agencies concerned.

(4) You will cooperate with the Bureau of Reclamation by suppling water from the international storage reservoirs for distribution by that agency to such projects as may be under its jurisdiction, within the allocated share of the United States and within the legally established appropriative water rights of any such project; and, subject to the same limitations, where no such Bureau of Reclamation project exists, you will cooperate with other duty authorized agencies or officers, Federal, State, or local, by supplying water for domestic, municipal, agricultural, industrial, and other authorized uses. To the extent that additional legislation, either Federal or State, may be deemed necessary in connection with the disposition of any water made available to the United States for consumptive use, as the result of the construction of these international dams, you are requested to collaborate with the Bureau of Reclamation and all other interested agencies in the preparation of such legislation.

(5) You are requested to consult freely with the Bureau of Reclamation in any future investigations looking toward the generation of electric power at the Rio Grande international dams, in the preparation of plans therefor, and with respect to the internal distribution of such power. You are requested also to collaborate with the Bureau in the preparation and presentation of any necessary Federal legislation to enable that agency to dispose of such power, within

the share of the United States, and such surplus power within the share of Mexico as that country may wish to market in the United States, in agreement with the principles laid down by the Congress in the Flood Control Act of 1944.

Cooperation and consultation with the Bureau of Reclamation, including where feasible the utilization of the services of that agency, will be governed by, and consistent with, the provisions of the memorandum of understanding between the Department of State and the Department of the Interior, approved by the President on June 18, 1945.

As stated above, it must be borne in mind that the successful discharge of treaty functions, particularly in connection with the joint construction and operation of international works, will require continuing collaboration and cooperation with the Mexican Section of the Commission, and that, accordingly, full control over the work allocated to the United States and responsibility therefore must be retained in the United States Section of the Commission, functioning under the supervision of this Department so far as general policy is concerned. It should be understood, of course, that the control of diversions from the Rio Grande of waters allocated to the United States is a matter solely within the province of the United States Section, and that the generation of power at the international plants is one solely within the province of the Commission, subject in each case to the terms of the treaty and the protocol. On the other hand, the internal distribution of such water and power, within the share of the United States, and of such surplus power within the share of Mexico, as that country may wish to market in the United States, is a matter properly within the jurisdiction of the appropriate internal agencies, Federal, State, and local.

In carrying out the treaty provisions under your charge and in cooperating with the other agencies of the United States you will be guided by the foregoing instructions and such additional instructions as the Department may from time to time communicate to you.

Sincerely yours,

JAMES F. BYRNES.

THE WHITE HOUSE,
Washington, October 3, 1945.

Memorandum for the Secretary of State.

Subject: Construction activities of the International Boundary Commission, United States and Mexico.

As you know, the treaty between the United States and Mexico relative to the disposition and control of the boundary waters, ratified by the Senate on April 18, 1945, is now awaiting approval by the Mexican Government. As soon as the treaty becomes firm, the United States Section, International Boundary Commission, United States and Mexico, will be authorized thereby to undertake certain major construction projects including several dams and reservoirs on the Rio Grande. I am advised that because of the water situation in that valley, it will be desirable for the construction of these projects to receive a relatively high priority among Federal public-works projects. The design and construction of large impounding reservoirs will be a new type of work for the Commission. We already have in the Federal Government two agencies long experienced and well equipped in this particular field. It is my desire, therefore, that in the interests of economy and efficiency the United States Commissioner of the International Boundary Commission, while retaining full responsibility for the work involved, make the maximum feasible use of these existing agencies in accordance with section 601 of the Economy Act.

The question of distribution and sale of the United States share of the waters and incidental electric power is not, of course, covered in detail in the treaty. The Bureau of Reclamation has for the past 40 years been distributing water from Federal reclamation projects in accordance with reclamation law. The Flood Control Act, approved December 22, 1944, extended jurisdiction of the Bureau end of reclamation law to apply to water made available for irrigation purposes as a byproduct of flood-control projects and designated the Secretary of the Interior as the responsible officer of Government to dispose of excess hydroelectric power. The Bureau of Reclamation is now operating a project for the distribution of the irrigation water in the valley of the Rio Grande. It would seem proper, therefore, that the distribution of any water available to the United States for consumptive use as a result of construction of these international dams be the responsibility of the Bureau of Reclamation in general accordance with the principles of reclamation law.

While immediate development, distribution, and sale of hydroelectric power at the Rio Grande international dams is not imminent, and this subject is only touched upon in the agreement between the Department of State and Department of the Interior which I approved on June 18, 1945, I feel that any projected or proposed investigations for that purpose should also follow the principles laid down by Congress in the Flood Control Act of 1944 to the end that surplus energy would be disposed of by the Secretary of the Interior.

I would appreciate your issuing to the Commissioner, United States Section, International Boundary Commission, United States and Mexico, such instructions as are necessary in the light of this memorandum.

HARRY TRUMAN.

(Whereupon, at 11:25 a. m., the subcommittee adjourned until 10 a. m. the following day, Thursday, May 8, 1952.)

STUDY OF CIVIL WORKS

WEDNESDAY, MAY 14, 1952

HOUSE OF REPRESENTATIVES, COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE TO STUDY CIVIL WORKS,
Washington, D. C.

The subcommittee met, pursuant to adjournment, at 10:05 a. m., in room 1302, New House Office Building, Hon. Robert E. Jones, Jr., presiding; Charles D. Curran, staff director.

Mr. JONES. The committee will come to order.

We have this morning the representatives of the Engineers Joint Council, Dr. R. D. Hoak, senior fellow of the Mellon Institute of Industrial Research at Pittsburgh; Mr. F. W. Scheienhelm, consulting hydraulic engineer of New York City; and Mr. E. B. Whitman of Whitman, Requardt & Associates, engineers, of Baltimore, Md.

We are delighted to have you gentlemen this morning, and you may proceed in any fashion most convenient to you.

STATEMENTS OF DR. R. D. HOAK, MELLON INSTITUTE OF INDUSTRIAL RESEARCH, PITTSBURGH, PA., CHAIRMAN OF HEARINGS COMMITTEE OF ENGINEERS JOINT COUNCIL; F. W. SCHEIDENHELM, CONSULTING HYDRAULIC ENGINEER, NEW YORK, N. Y.; AND E. B. WHITMAN, OF WHITMAN, REQUARDT & ASSOCIATES, ENGINEERS, BALTIMORE, MD.

Dr. HOAK. Thank you you, Mr. Chairman. My name is Hoak. I am a senior fellow at the Mellon Institute of Industrial Research. I have been a member of the Engineers Joint Council Panel on National Water Policy since its inception, and I am chairman of its hearings committee, that committee having the function of providing witnesses when requested for such conferences or hearings at this.

Colonel Scheidenhelm, who is a consulting engineer of New York, has been a chairman of the task committee No. V, and he is a member of the committee IX, which reported on the principles of general applicability. He is also chairman of the cost-allocation committee for multiple-purpose water projects of the American Society of Civil Engineers.

Mr. Whitman is a consulting engineer of Baltimore and is a member of the committee on principles of general applicability. He has been chairman of the Public Service Commission of Maryland and chairman of the Maryland State Roads Commission, and is a past president of the American Society of Civil Engineers as well as past president of the American Institute of Consulting Engineers.

We have not asked any representatives from the West to come here this morning because it is our understanding that the committee does not have any intention of going very deeply into matters involving irrigation and related projects. Under those circumstances we thought it well to keep the travel expenses down, if we could.

I would like to ask the chairman what his wishes are. Would there be any need for reading this document or high lights from it, or would it be preferable to take what time we have for questions?

Mr. JONES. I think it would be to your advantage and to ours, too, if you would high light it and point out to the members of the committee the most pertinent points which you want to stress. I think that would be far better, Dr. Hoak, and that will predicate the answers that will come afterward.

Mr. DONDERO. You always leave a better impression on the committee if you keep away from reading.

Mr. JONES. Without objection, the statement will be inserted in the record and then you can proceed to high light the most important points.

(The statement of the Engineers Joint Council is as follows:)

STATEMENT SUBMITTED IN BEHALF OF ENGINEERS JOINT COUNCIL BEFORE HOUSE COMMITTEE ON PUBLIC WORKS, SPECIAL SUBCOMMITTEE TO STUDY CIVIL WORKS

THE NATIONAL WATER POLICY STUDY OF ENGINEERS JOINT COUNCIL

The development and operation of water projects, in their physical aspect, and to a considerable extent with regard to economic factors, is an engineering matter and the carrying out of such service represents a material part of the professional engineering work of the country. In consequence, many members of the engineering profession are technically skilled in the field of water projects, and—in the aggregate—professional engineers represent the group which has the primary knowledge and economic perspective in the field of water resources. Moreover, they are by no means without sociological instinct and experience.

Engineers Joint Council (EJC) is an organization—in effect a clearinghouse for matters of common interest—of five national engineering societies: American Society of Civil Engineers, American Society of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, and American Institute of Chemical Engineers. The combined membership of these societies is about 130,000.

Recognizing the urgent need for a coordinated and uniformly applicable national water policy, EJC began in 1947 the study of the possibilities of bringing about congressional adoption of such a policy and the principles which should underlie it.

Subsequently, in December 1949, the President's temporary Water Resources Policy Commission was designated, and at its request Engineers Joint Council prepared and in June 1950 presented to that Commission a mimeographed Statement of Desirable Policy With Respect to the Conservation, Development, and Use of the National Water Resources.

For the preparation of that statement there were solicited the voluntary services of some 75 of the leading experts of the United States, having long experience in the field of water-resources development.

The personnel of the undertaking adequately covers the geographical area of the United States. In terms of type of engineering service, the membership is well spread throughout the fields of consulting engineering practice, State and municipal service, university and other institutional organizations, and industry. No engineers now actively engaged under the Federal service were requested to serve, but experience within the Federal services is well represented, since about one-third of the committee membership has, at some time, had actual experience in the civil functions of the Corps of Engineers, the Bureau of Reclamation, etc.

The work was divided among eight task committees, covering the eight major functional fields of water resources development and use; a committee on general economic principles—in practical effect a ninth task committee; and a coordinat-

ing committee, responsible for reconciling the tax committee reports and for the preparation of a summarized report.

The individual engineers bought to this voluntary work a distinctly objective approach. The several committees proceeded to their tasks with expedition and enthusiasm. Their work was carried on both by correspondence and by meetings in geographical centers of the country. It is significant that within the respective task committees there developed unanimous agreement upon basic principles—this despite the fact that the indviduals represented a wide scope and in many cases a great divergence of personal interest and experience.

During the first half of 1951, after review of the report of the President's temporary Commission, the nine EJC task committees and the coordinating committee reviewed, reedited and, where found desirable, revised their June 1950 statements.

The results of that revision were printed under date of July 1951 under the title "Principles of a Sound National Water Policy." Following a general statement, that publication contains the reports and recommendations of the nine task committees, set forth in appendices numbered and designated as follows:

I. Domestic and Industrial Water Supply and Pollution
II. Flood Control, Including Water-flow Retardation
III. Navigation and Inland Water Transportation
IV. Irrigation
V. Hydroelectric Power
VI. Recreation, Fish, and Wildlife
VII. Basic Water-Resources Information
VIII. Land Drainage
IX. Policies of General Applicability

Copies of that publication were transmitted to each member of Congress in October 1951.

It is understood that your committee is, at least for the present, limiting its consideration to procedures and criteria pertaining to water-resources development by the Federal Government, particularly as such falls within the jurisdiction of the House Public Works Committee. Consequently, this statement will not dwell upon what in the EJC report is set forth as a sound principle which should be controlling; namely, that, in water-resources development, State and local responsibility should, to the maximum extent feasible, be preeminent and be consciously and effectively nurtured and extended in water project programing, execution, and financing.

The remainder of this statement is comprised essentially of excerpts from the full EJC report, arranged according to those subjects which are understood to be of particular interest to your committee at the present time. For further details, the members of the committee are referred to the full report.

RECOMMENDATIONS OF EJC UPON SPECIFIC SUBJECTS

A. Economic justification

1. *General.*—The Federal Government should not undertake any water development which is not economically justifiable in the sense of being financially justifiable., For determining such justification, there should be established criteria which are applicable to all functions of such development and to all Federal agencies concerned. Reappraisals of such development should be made from time to time, treating separately and realistically the benefits and the costs—by components where the development is multipurpose.

In general, the participation of the Federal Governmnet in water development should be in the role of a trustee responsible for the most efficient and equitable use of the taxes which have been collected. It follows that the pertinent expenditures, whether or not to be reimbursable, should be such as will result in the greatest benefit to the whole citizenry as taxpayers. As to nonreimbursable expenditures, they are justifiable only if they are truly for the general benefit.

The latter consideration and as well the fact that there is competition between possible objects of use for the limited amount of Federal money which is available require determination not merely of what is good but of what is best when comparison is made among the benefits which could be derived for the Nation from the expenditure of like sums anywhere else and for any proper purpose whatsoever. Only such portions of the total cost of a proposed Federal water development as will actually be repaid with interest by the beneficiaries can reasonably be excluded from the test.

In any case, however, water developments as a whole and, where multipurpose, each component thereof, should be appraised by means of the ratio benefits to cost.

Reappraisals of Federal water developments should be made from time to time. Particularly should this be true prior to the completion of a substantial amount of construction. Reappraisal should take place immediately preceding any proposed authorization of such a development and any proposed appropriation therefor.

It is recognized that, where there are involved specific needs of national defense, the normally applicable criteria of economic justification may not always reasonably apply. However, a mere general claim of contribution to national defense or to strengthening of the national economy should not be treated as constituting adequate justification of a project or even as affording part of the tangible benefits required for economic justification. (By "tangible" is meant "expressible in terms of money.")

2. *Benefits.*—In the appraisal of a water resources development and its component functions (if the development be multipurpose), the benefits should be expressed in average annual monetary terms. For the purpose of determining economic justification, the benefits to be taken into account for any given function must not exceed the alternative expenditure for the accomplishment of that function. The alternative expenditure is the average annual cost of the least expensive of the reasonably available, physically feasible, alternative means for the accomplishment solely of that function.

The benefits to be considered should be net benefits, viz, the total of the net annual income and other tangible benefits minus all costs incurred by the beneficiaries (as distinguished from the Federal Government) in attaining those benefits and, further, minus all disadvantages or injurious, but tangible, results of the development or due to the given component, as the case may be.

In determining benefits and detrimental results, there should in general be taken into account only those benefits or detriments which will accrue to contemporaries of the project. Benefits and detriments should be treated alike, i. e., the determination thereof should go no further afield with regard to the one than with regard to the other.

Tangible benefits should be determined in net, not gross, amounts.[1] All effects upon taxes, whether to increase or decrease them, should be considered, also any uncompensated damage or depreciation in market value resulting to other property. Similarly, reasonably prospective but tangible collateral gains or income such as realizable rentals for agricultural purposes, from areas of storage reserved for flood control, should be taken into account.

Intangible benefits or detriments should not be considered in determining economic justification. They may, however, be considered in choosing between otherwise justifiable multipurpose projects.

(*a*) As to alternative expenditure, constituting a ceiling on benefits, hydroelectric power probably affords the clearest example. Particularly is this true where the source alternative to hydroelectric power is steam-electric power. For more details, see the EJC full report, page 123.

3. *Required margin of benefits over cost.*—In order that Federal water resources developments may qualify as being economically justified, the ratio of tangible benefits to cost, each on an annual basis, should not be less than 4 to 3 (1.33) when based upon determination of benefits and cost in accordance with the EJC recommendations. In cases where the factors entering into the ratio cannot be estimated closely or where they may not be realized for a long or an indefinite period in the future, the corresponding ratio should not be less than 2 to 1 (2.0). Depending upon the relative probabilities of realizing within a reasonable period the benefits and costs involved, the requirements, as to the ratio, may appropriately be intermediate between 4 to 3 and 2 to 1.

It should be borne in mind that unless there is net gain, in benefits as compared with cost, the result of a given water resources development will not be an increase in the national wealth. This consideration in itself calls for a substantial margin.

In any case, developments which are so greatly dependent upon estimates, of benefits and costs, should contain ample allowance for errors in those estimates. In respect of costs, the history of Federal projects of this kind affords ample

---

[1] For instance, in the case of irrigation, the benefits (to the farmers) to be taken into account should not be those represented by average annual gross income from resulting crops or by increase over prior gross income but, instead, the net amounts after deducting for additional costs to the farmer for labor, taxes, etc.

evidence that such estimates are subject to error, preponderantly on the side of underestimating.

In varying degree all citizens pay Federal taxes, by means of which such developments will largely be built. They are entitled to a substantial margin as some degree of compensation for their participation in such developments, as compared with what they might do with the taxes saved were such developments not to be made.

If, at any time following authorization of a project but prior to or during the time when a substantial appropriation for construction is under consideration by Congress, the current ratio of benefits to cost has fallen below the ratio required for justification, the making of any appropriation for the project should be deferred.

4. *Effect of changes in price levels.*—In general, the adjustment of both benefits and costs by the same multiplier is improper.

In reappraising benefits and costs due to any changes in price levels, it is not realistic or proper merely to apply to each the same multiplier or price-level index. The result would be to retain the same ratio (benefits to cost) regardless of price level. There is no necessary relation between the pertinent variations on the benefits side of the ratio as compared with those on the cost side. In this connection, it needs to be borne in mind that costs become fixed as of the time of construction or expenditure, whereas benefits will vary from time to time in the future, depending upon, not merely changes in price level but also, technological progress in respect of the alternatives for the several functions of a given water development. Each case must be considered by itself.

5. *Justification by projects rather than by river basins.*—Individual developments or projects, whether of single or multiple purpose, should each be subject to the standard criteria of economic justification including margin of benefits over cost, except that such as are physically and of absolute necessity interdependent may reasonably be treated as a unit for purposes of economic justification. No exception should obtain as concerns general or comprehensive plans for a given stream or river basin.

This recommendation is made with full recognition of the arguments advanced in behalf of "basin accounts" and the like. The result of the latter would, in effect, be to use surplus values or benefits accruing from the stronger projects in order to make up for the deficiencies of the weaker projects.

It is a principle of good business, worthy of following in public business of this kind, that one does not knowingly embark upon projects from which the returns will not exceed the costs. The taxpayers individually would of course bar investment of their own savings in projects which are not economically sound. Inasmuch as the costs of Federal water developments are financed largely or solely by taxation, there is no justification for the Federal Government to spend the tax proceeds on uneconomical projects.

6. *Method and period of amortization.*—As the specific method of making actual or hypothetical payments in liquidation of the investment in Federal water developments and in computing their costs, whether or not to be reimbursable to the Treasury, amortization should be on the straight-line basis and involve a period of not more than 50 years.

By straight-line basis is meant that method which involves repayment of the investment in equal annual amounts determined by dividing the investment by the number of years in the period of amortization. It follows that the charge for the use of the money involved in the investment should apply only to the unpaid balance of the investment.

The straight-line method is recommended because:

(*a*) It gives the taxpayers earlier benefit of repayment, i. e., a greater portion of the repayment occurs during the lifetime of the generation of taxpayers whose taxes contributed to the investment.

(*b*) The straight-line method is more conservative, for during the early life of the project the charge for amortization is greater than for the alternative sinking fund and equal-annual-payment methods—each of the latter being based on compound interest.

(*c*) Writing off the investment more rapidly during the earlier part of the amortization period, there would be less loss in event of unanticipated obsolescence.

The fact that the charge against the project is greater during its early life does not mean that there would be no allowance for the needs of developing the project's business. The latter is a separate problem, reasonably to be solved by adding to the capital investment the amount by which the actual income during

the period of development is deficient as compared with requirements for self-support and self-liquidation.

The period of amortization, although recommended to be limited to a maximum of 50 years, should in no case extend beyond the reasonable expectancy of life of the development or its components. There may reasonably be different periods among the several components of a multipurpose development.

The cost of replacing the parts which have a shorter life than the period of amortization might be provided through the setting up of a higher annual rate of amortization for those particular parts. However, with equal propriety and probably greater convenience, the provision for the replacement of such relatively short-lived parts can be met by means of the recommended separate allowance for interim replacements.

The recommended amortization requirement makes unnecessary any allowance for depreciation beyond the provision for interim replacements.

7. *Charge for use of money.*—The charge made for the use of money should cover all aspects of all such cost.

Commonly, such charge is designated "interest." However, interest on borrowed money is only part of the cost. There are additional costs, such as those of placing loans, levying, collecting, and auditing Federal taxes, etc.

Taking into account all of the costs and implications involved in Federal financing of water developments, it is fair to say that such financing is far from being as cheap as commonly assumed or as is indicated by charges [2] for the use of money, running at present merely from 2 percent to 3 percent per annum.

The full charge for use of money should be taken into account as a cost without exception—even for irrigation. If thereupon part or all of such charge is to be waived, the waiver would constitute, and should be treated as, a subsidy.

8. *Taxes.*—In computing the annual costs of Federal water developments, for determining economic justification or for any other purpose, there should be included amounts equivalent to the taxes which would have to be paid were the lands, physical improvements, and business, if any, not exempt from taxation, whether Federal, State, or local. So far as practicable, lands and rights subject to taxation when acquired by the United States for such developments should continue to be subject to the same requirements of local or State taxes (or payments in lieu thereof), including changing assessments and rates of taxation, as would obtain if the lands and rights were privately owned, i. e., the United States should actually pay such taxes or the equivalent thereof. In the case of Federal revenue-producing water developments, the principle should be extended to provide for the payment of State and Federal income and excise taxes or their full equivalent.

The objectives of the foregoing recommendation are primarily:

(*a*) To protect the local communities or taxing districts from unreasonable burden because of removal of Federal project sites from the local tax rolls.

(*b*) To expand, rather than to decrease, the tax bases for support of the State and Federal Governments.

(*c*) To ameliorate any competition of Federal projects with private enterprise.

If provision in law is not made for the actual payment of such taxes, the full equivalent of such payments should be charged against the proposed or actually operating developments. Such should be taken into account at all stages, beginning with preauthorization reports.

Nothing short of such procedure will result in disclosing the true economics of the developments, including their effects, prospective or actual, upon local taxing bodies and taxpayers and upon all Federal taxpayers.

B. Authorization of water developments

1. *General.*—Authorization of Federal water developments should be solely by Congress; should be of individual projects fitting into comprehensive plans for streams or basins, but authorizations (as distinguished from approval of comprehensive plans) should not be in blanket form; and should serve as an absolute limit on appropriations. As to new projects, in general there should be no further authorization until uniform policy has been adopted.

Authorizations for Federal water developments should all be by Congress—none by the head of a Federal department or agency.[3]

---

[2] Meaning charges adopted by Federal agencies dealing with water resources developments. The present rates of charge are not hereby endorsed.

[3] At present, the Secretary of the Interior, for instance, is under certain conditions empowered to authorize projects in the reclamation category (Reclamation Project Act of 1939, sec. 9 (a)).

It is recommended that there be no authorization for the partial accomplishment of any comprehensive plan of development for a stream or basin, i. e., in general, authorization should not be for all of the projects in a river basin or even a series of projects. Instead, the accomplishment of any comprehensive plan should, so far as concerns any Federal participation, be initiated by means of specific authorization of a given project for Federal construction and for appropriation in a stated amount, followed by appropriation in a specified amount for that project. Such procedure is believed not merely to be logical from the standpoint of Federal development but also, to leave opportunity for the maximum participation by non-Federal capital.

It is recommended that, for public works and projects already in progress—just as is already the rule for other objects of Federal expenditure, there be adopted the rule that there may be no appropriation in excess of the amount authorized for appropriation.

As between projects suitable for authorization for Federal construction, the choice should be in favor of projects which are best from the standpoint of the country as a whole. Distribution geographically or by States or by congressional districts should not be controlling. Moreover, the prospective results of contemplated expenditures for favorably considered projects for the development of water resources should be weighed in comparison with the prospective results of equal expenditures which might in lieu be made by the Federal Government for purposes other than water resources development.

It is recommended that, in general, until the pertinent uniform national policy has been decided upon and made effective, there be no further authorizations and no appropriations for Federal water developments except further appropriations for those projects as to which irrevocable commitments have been made to the extent of at least one-quarter of the up-to-date estimates of cost.

2. *Automatic voiding of authorizations.*—Authorizations of Federal water development should become void if the project cost overruns by 20 percent the cost estimated at the time of authorization.

If the estimated cost of a project has increased by 20 percent over that obtaining at the time of its authorization, the authorization for such project should automatically become void and subject to review and recommendation to Congress by its pertinent legislative committees.

Note also the recommendation as to the deferring of substantial appropriations for construction of a project whenever the then existing ratio of benefits to cost has fallen below the ratio required for justification at the time of authorization. See last paragraph of comment under item A–3 above.

3. *Limitations upon modifications by administrative agencies.*—Authorizations of Federal water developments should be congressionally reviewed upon any substantial change in project.

Upon any substantial change in plan, design, storage capacity, or power installation and upon any proposed substantial change in site or proposed substitution for a given project, that project and its authorization status should be reviewed by the pertinent legislative committees of Congress.

4. *Authorizations of Federal hydroelectric development.*—Except for meeting the needs of the Federal Government itself, congressional authorizations for Federal hydroelectric power construction should be predicated upon the cash income to the Treasury reasonably to be expected from the sale of power. In any case, authorizations should fully disclose the power purpose and should be solely by Congress itself.

The intent here is to emphasize that, for authorization purposes, there should be excluded any part of the power value which would not be realized as cash income to the Treasury and which instead would accrue as benefits to, but would not be paid for by, the power consumers.

If the power from a Federal water development is to be sold at less than the officially appraised value, that fact needs to be given special attention at the time the authorization of a given hydro development is under consideration. If, once the construction has been completed or is heavily under way, the power is sold for less than the appraised value as reported to Congress, the authorization of the project is practically certain to have been in the light of a misunderstanding of the facts and in any event it will be too late to do anything about the authorization.

Federal agency reports should set forth all of the purposes and authorization legislation should clearly set forth at least all of the primary purposes for which a given multipurpose water development is proposed to be constructed. In particular, projects involving power development as an important or pre-

dominant purpose should not be included in authorization legislation in such a manner as to imply that, contrary to the fact, the project is solely or predominantly for flood control, navigation, or irrigation.[4]

C. Avoidance of project-planning which may become useless

Bearing upon this objective are the EJC recommendations for—

1. More thorough investigation prior to authorization, including investigation of economic justification. See pages 196–198 of full report.
2. Requirement of greater margin of benefits over cost; see item A–3 above.
3. The setting up of a board for impartial analysis and appraisal.

D. Board for impartial analysis and appraisal

There should be created a board for the impartial analysis and appraisal of Federal water projects and its review and report thereon should be prerequisite to the authorization or appropriation by Congress of or for projects of that kind.

The aim of the creation of such a board should be to obtain objective analyses and appraisals of projects or pertinent recommendations submitted by the several Federal agencies through executive channels. The board should be charged with the duty of making certain that recommendations submitted to Congress for water-resources development comply with sound economic principles and national policy.

Adequate time should be available for such analyses and review. The sums of money involved and the potential effect upon the national economy are such as to demand nothing less.

It is submitted that a board of review existing or to be established within a Federal agency does not meet the reasonable requirements of the situation. However, no position is taken upon the question as to whether such a board should be responsible to the Executive or to Congress.

The membership of such a board should consist of thoroughly qualified personnel, provided with adequate staff. A reasonable proportion of the board's membership should be selected from a list nominated by Engineers Joint Council or some like qualified body representative of the engineering profession.

In order to insure impartiality of review, but without reflecting upon individuals who might fall within the category proposed to be excluded, it is believed to be reasonable that no considerable proportion of the members of the board should consist of persons who have spent any large amount of time in the employ of any Federal agency.

E. Allocation of costs

There is pressing need for ascertaining, just as nearly as may be, the costs of fulfilling the respective functions of a Federal multipurpose water development. For that purpose, distribution of costs in proportion to benefits is improper. For application generally and uniformly among Federal agencies, in apportioning the costs of jointly used facilities, the proportionate use-of-capacity method is recommended.

As far as practicable, such determination of costs should be independent of the benefits obtained by the fulfillment of the respective purposes. Distribution of costs on the basis of benefits will result only in arbitrary assignment or assessment in proportion to what given functions or components can bear or afford. In general, such method will fail to disclose any lack of economic justification existing in the case of any of the components.

The problem being essentially one of apportioning the costs of jointly used facilities, such as dams, reservoirs, and water conduits, we recommend the proportionate-use-of-capacity method as affording a minimum of arbitrariness and a maximum of logic and equity. Thereunder, the apportionment, among the primary components, of such joint costs (exclusive of the parts thereof attributable to incremental components, if any) is in direct proportion to the extent of use (of the capacity of the jointly used facilities) to which the respective components are entitled. The method applies whether the costs to be apportioned are initial (i. e., investment) or annual.

Assessment of the cost of Federal multipurpose development against some or any of the respective functions, for purposes of fixing so-called repayment requirements, levying taxes, etc., may be accomplished by suitable adjustment

[4] As regards projects within the civil functions of the Army engineers, the present legislative situation in this respect is undesirably influenced by the fact that authorizations and appropriations, whether or not involving power, must fall within the categories of either rivers and harbors (navigation projects) or flood control.

(within appropriate limits) of the preliminary or primary allocation of cost. In any event, the method should be uniform for all Federal agencies.

For further details, see the EJC full report, pages 203–205.

Disposal of products

1. *Selling price of Federal power.*—For power sold and for power-development licenses at Federal dams, the Federal Government should require and receive payment at rates not less than such as correspond to the appraised power value upon which the construction of the project was predicated, excepting only where the pertinent market prices ("market values") actually are less than such rates. The aim should be to secure, as cash income to the Treasury, the full value of the power as appraised at the time of authorization of or appropriation for the project.

The sale of federally produced power is necessarily limited to such power as is not needed for Federal purposes. As to such sale, there should be uniformity of policy as regards all kinds of projects and all Federal agencies responsible for the sale or leasing of power.

In the cases of many Federal hydroelectric developments, there is a difference between, on the one hand, the value of any saleable power, as appraised by the responsible Federal agency and as generally—in the case of Army engineer projects, always—represented to Congress, and, on the other hand, the prices at which the power is offered for sale. In general that difference is large. As to Army engineer projects, deficiencies under the Interior Department selling prices, as compared with the officially appraised values, may run as high as two-thirds of the latter.

For all cases of selling Federal power or of licensing the privilege of developing Federal power, there should be established the principle of obtaining not less than the appraised value on the basis of which the construction of the project was authorized. Nothing less is believed to be fair to the Nation-wide citizenry as taxpayers who have contributed the funds or credit which makes such developments feasible.

The representations of value to Congress and to the public should be made good in revenues paid into the Federal Treasury.

For further details, see EJC full report, pages 126–128 and 134–143.

2. *Sale of water for domestic and industrial purposes.*—On multipurpose projects involving public water supply, the local community should pay its fair proportion of the cost and the project should then be carried forward only if the remaining part of the cost to be provided from Federal funds has a proper benefits to cost ratio.

G. Subsidization

To the maximum feasible extent, the beneficiaries of Federal water resources developments should be required to compensate the Government, and hence the Nation's taxpayers, for the benefits accruing directly to them. Where, nevertheless, there is subsidization, there should be complete disclosure in all details, beginning with the initial reports recommending the development or project for authorization by Congress. Subsequently, all pertinent reports, including annual reports, should disclose the respects in which and the extent to which subsidies are involved.

"Subsidization" is here used as including the furnishing by the Federal Government of a commodity, service or other benefit gratis or at less than either its cost or its reasonable worth to the recipient.

The requirement that beneficiaries make substantial payment would constitute an important safeguard or check against unworthy projects.

A subsidy in the form of forgiveness of the charge for the use of money ("interest") involves no direct payment to the beneficiary but is nonetheless real from the standpoint of the Nation's taxpayers, whose contribution would otherwise be correspondingly less.

Where there is subsidization of a water development, it should, so far as practicable, be in the form of appropriation annually out of the Treasury by Congress.

The national program of water resources development and policy in regard thereto have not advanced so far that it is too late to modify—and particularly to reduce—the extent of subsidization now practiced. For instance, flood control as a national program is hardly 12 years old and that period includes five years of World War II, when work of that kind was largely at a standstill.

Dr. HOAK. There are several statements in the introductory matter that I think it might be pertinent to stress. I will try not to read the entire introduction, but only those portions that appear to be pertinent to our inquiry today.

The development and operation of water projects, in their physical aspect, and to a considerable extent with regard to economic factors, is on engineering matter and the carrying out of such service represents a material part of the professional engineering work of the country. In consequence, many members of the engineering profession are technically skilled in the field of water projects, and—in the aggregate—professional engineers represent the group which has the primary knowledge and economic perspective in the field of water resources. Moreover, they are by no means without sociological instinct and experience.

Engineers Joint Council (EJC) is an organization—in effect a clearinghouse for matters of common interest—of five national engineering societies:

American Society of Civil Engineers
American Society of Mining and Metallurgical Engineers
The American Society of Mechanical Engineers
American Institute of Electrical Engineers
American Institute of Chemical Engineers.

The combined membership of these societies is about 130,000.

Recognizing the urgent need for a coordinated and uniformly applicable national water policy, EJC began in 1947 the study of the possibilities of bringing about congressional adoption of such a policy and the principles which should underlie it.

Subsequently, in December 1949, the President's temporary Water Resources Policy Commission was designated and at its request Engineers Joint Council prepared and in June 1950 presented to that Commission a mimeographed "Statement of Desirable Policy with Respect to the Conservation, Development, and Use of the National Water Resources."

For the preparation of that statement there were solicited the voluntary services of some 75 of the leading experts of the United States, having long experience in the field of water resources development.

The personnel of the undertaking adequately covers the geographical area of the United States. In terms of type of engineering service, the membership is well spread throughout the fields of consulting engineering practice, State and municipal service, university and other institutional organizations, and industry.

Mr. DONDERO. Will you submit to a question there? When the President's Water Resources Committee requested the Engineers Joint Council to make some contribution toward the subject, were you at that time in any way compensated for the work which you had done?

Dr. HOAK. Oh, no.

Mr. DONDERO. That was voluntary?

Dr. HOAK. All of the work that was undertaken by this group was completely voluntary. Their expenses, except some traveling expenses paid by EJC, and their time were out of their own pockets. I think it is important to note that, although none of the individuals who served on this group were employees of the Federal Government,

about one-third of the personnel had had previous experience in Government service with the Corps of Engineers in its civil functions, and with the Bureau of Reclamation, and so forth.

The work was divided among eight task committees, covering the eight major functional fields of water resources development and use; a Committee on General Economic Principles—in practical effect a ninth task committee; and a Coordinating Committee, responsible for reconciling the task committee reports and for the preparation of a summarized report.

A point I think is also worthy of note is the fact that the committees did proceed with enthusiasm and dispatch to undertake what task had been given them, and their work was carried on both by correspondence and by meetings in various geographical areas of the country. Most significantly there developed through the consultation of the various members of the several committees a completely unanimous agreement upon basic principles. This was despite the fact that the individuals represented a wide divergence in many cases of personal interest and experience.

It is understood that your committee is, at least for the present, limiting its consideration to procedures and criteria pertaining to water resources development by the Federal Government, particularly as such falls within the jurisdiction of the House Public Works Committee. Consequently this statement will not dwell upon what in the Engineers Jount Council report is set forth as a sound principle which should be controlling, namely, that in water resources development, State and local responsibility should, to the maximum extent feasible, be preeminent and be consciously and effectively nutured and extended in water project programing, execution, and financing.

Mr. JONES. Let me ask you a question at that point. As I recall it, in a document presented you had some criticism of the President's Water Resources Policy Commission report, finding that proper recognition was not being given to local, State and municipal governments, and to local interests. Upon what basis did you come to that conclusion?

Dr. HOAK. Would you like to respond to that, Colonel? Specifically the question concerns justification for our statement that perhaps proper account had not been taken of the local interest in some of the curent activities of various agencies of the Government.

Mr. SCHEIDENHELM. I think possibly the chairman's reference is to a letter of transmittal of the report? If there is that in the report itself I am not familiar with that, because it had nothing to do with any committee that I had a part of. I think the emphasis in the report is rather that there should be participation to a greater extent than there has been in the past by States and their local subdivisions, public utility districts and private companies and individuals.

Mr. JONES. Do you have any suggestion as to how that policy could be pursued with some degree of success? As I recall it, the report did not go that far, but it pointed up the fact that there was greater need of cooperation between the Federal agencies and the local interests.

Mr. SCHEIDENHELM. It is my understanding that the emphasis is upon greater participation rather than emphasis on cooperation. There was, of course, far less cooperation prior to the Flood Control Act of 1944 than theretofore, because at that time it became imperative

for both the Corps of Engineers and the Bureau of Reclamation to submit their reports first to the Governors of the States; but that in itself did not emphasize participation by the States financially and otherwise, or by their subdivisions.

Mr. JONES. Do you have in mind just the financial interest? Is that what brought it about?

Mr. SCHEIDENHELM. Not merely that.

Mr. JONES. Let me read you part of the statement:

> Despite some references to local and State participation the emphasis in the report is almost universal on Federal direction and control.

Mr.. SCHEIDENHELM. That reference is to the report of the President's Water Resources Committee.

Mr. JONES. That is right. That is what I am asking you about. Maybe I did not make myself quite clear.

Mr. SCHEIDENHELM. I think that is true. I think that is true also of the proposals for legislation as advanced by that Commission and made public only relatively recently.

Mr. JONES. How could we reconcile the Federal and local interests? How could we bring them into the common enterprise?

Mr. SCHEIDENHELM. With a greater extent of opportunity for initiative locally and greater representation.

Mr. JONES. Let me give you an example of what is happening out in the Kaw, the Blue, and Republican Rivers. I am sure you are quite familiar with that enormous flood they had out there last year. As a result of discord in the affected flood area they have not been able to reach a common understanding as to what needs to be done in that area. Consequently nothing is being done. Not a single penny was appropriated this year. Should the Federal Government with its tremendous interest be indifferent to that situation until such a time as the people in that area themselves reach an accord as to the engineering procedures to be adopted?

Mr. SCHEIDENHELM. That is a hard knot to unravel. I can only give a personal view, that when there is an absolutely necessity downstream, particularly one affecting the interstate commerce phases—and I myself would limit it to that, as I think it is limited in law—then the Federal Government can and I think should step into and handle.

Mr. JONES. I was bringing up the point of how this thing works both ways where sometimes it is very easy to get local participation and local agreement as to some positive course to pursue in flood control matters; and yet on the other hand in cases such as I have mentioned to you in the area of the Kaw, the Blue, and the Republican Rivers there is such dissension going on there at the present time that there is very little likelihood of them ever reaching an accord. Unless the Federal Government takes positive steps nothing will ever be done there.

Mr. SCHEIDENHELM. That is a place where the Federal interest should step in, I would think, and presumably with some pressure bring about a solution.

Mr. JONES. In other words, it is your notion, Colonel, that as long as it is a question of participation in a program resting solely on the responsibility of the Federal Government, the government should pursue its work with dispatch even though it conflicts with local in-

terests, because it has a paramount interest in the work to be committed in a given area?

Mr. SCHEIDENHELM. Assuming that interest is paramount, I would suppose so.

Might I suggest another aspect of that, that if——

Mr. JONES. I say that is unusual that we have developments taking place throughout the country like we have experienced in that Kansas area.

Mr. SCHEIDENHELM. I understand that that is true, sir, but I was going to suggest that there is a point on which the Engineers Joint Council's recommendation is very specific, namely, that the beneficiaries of developments in which Federal funds are spent should participate financially and help pay for them. That does not necessarily mean entirely, but participate definitely so that they have a stake in it. If that were in the picture some of these problems that are exceptional, as the chairman has stated, might be resolved, because the people downstream might not be willing to put up any money for them. Where that is the case it seemed to our committee, and it seems to me personally, that is a very good item of evidence that the construction of the proposed works is after all not economically justified. But I am not saying that that is true as applied to this situation in Kansas.

Mr. DONDERO. Mr. Chairman.

Mr. JONES. Yes, Mr. Dondero.

Mr. DONDERO. Suppose, Colonel, that the subject was the development of water power in a State. I wonder if you had in mind as applied to the statement in the report that in such a case where power was to be developed, and that power invaded the rights of private enterprise or private investment within the State, did you mean by that report that the State should be consulted and the investor or the local municipalities consulted, before the work was done?

Mr. SCHEIDENHELM. I think there are several points that bear upon that in the recommendations of the Engineers Joint Council. I think the mere fact that it would be development of power would not be a reason in itself for emphasis upon local participation both on the advisory side and the financial. Not merely the fact that there might be competition with private interests, but rather because it is a development within the States and can affect what goes on there, and its citizens.

Mr. DONDERO. If the project had coupled with it not only power but flood control and navigation, of course then the subject and benefits would be so broadened that I think it is your opinion—and I am trying to get your thought—that local participation should not only be consulted, but perhaps share in the cost?

Mr. SCHEIDENHELM. Oh, absolutely. That view is very strong.

Mr. WHITMAN. If I could make a statement there regarding the Missouri River, that is a big project and there cannot be any State, or any municipality, or any private person who could step in and do that job. That has to be done by the Federal Government, possibly combining with States. In my own section on the Potomac River we have a Commission on the Potomac River which will have charge of the protection of that river from pollution and the development of the river for flood protection and for electric power. The same

thing is true with regard to the Delaware River, where they have what they call the Delaware River Commission, which is working in New Jersey, Pennsylvania, and New York. That is largely in connection with water supply, with the possibility of power. I think Colonel Scheidenhelm is familiar with the case of a private company which had developed plans for a development and one of the Government agencies stepped in, or one Government agency said it was all right and another one stepped in and said that they could not do it.

This whole report of the President's Commission, that is the Cooke report, states that there should be this cooperation, and then it goes on to say that practically the Government should have absolute control and it gives very little chance for any possible private development of water resources. I think that there should be a possibility for private development of water resources as well as State development or municipal development.

Take the city of New York. I was in the case of the diversion of waters of the Delaware River for New York City, and the diversion of waters of the Connecticut River for Boston, and the diversion of Great Lakes waters for the benefit of Chicago. Those were cases where it was all worked out without the Federal Government interfering in any way in any of those cases.

Mr. ANGELL. Mr. Chairman.

Mr. JONES. Yes, Mr. Angell.

Mr. ANGELL. Another example of conditions similar to the one raised is that of Hells Canyon on the Snake River, between Oregon and Washington. Many of the local interests are very much opposed to the project, even though the Government is proposing to proceed with the project. It is presumed to be reclamation, but at the present time the only developments to be made in the project as now proposed I am advised are hydroelectric power.

Do you care to comment on that proposition, Colonel, or are you familiar with the Hells Canyon project?

Mr. SCHEIDENHELM. I am generally familiar with it. I had nothing to do with it directly.

Mr. ANGELL. I mentioned it in connection with what our chairman has said as to what participation and cooperation local interests should have in a project proposed by the Federal Government if they are within the area of the local people.

Mr. SCHEIDENHELM. As I understand it, the situation there is primarily that it is a power project and that there is the opportunity or the proposal by the local company—I think the Idaho Power Co.—to make a power development which would differ somewhat from the development proposed by the Bureau of Reclamation.

Mr. ANGELL. That is true.

Mr. SCHEIDENHELM. That would apparently satisfy some people better than would the Bureau's proposal. Now, in general, so far as the Engineers Joint Council's recommendations are concerned, they would lean toward opportunity for the private development, wherever that is possible. Not because of the facts in that particular case—and I am not sure that I know all the facts in that case—but, in principle, unless there is very good reason to the contrary, the recommendation would be for private development.

Mr. ANGELL. What you have said is true on that project, as I understand it. The Idaho Power Co. has proposed to construct a number of lower dams utilizing the water and perhaps developing the same amount of power, but the Federal project contemplates one large dam.

Mr. SCHEIDENHELM. Yes. I so understand it.

Mr. ANGELL. There is a very decided opposition to the project by the local interests, particularly in Idaho. Down on the Columbia River, down in my area, there is more support for the project, although the local chamber of commerce of Portland, Oreg., has come out in opposition to it.

Mr. SCHEIDENHELM. Sir, referring not to the Hells Canyon project, but to situations broadly, as between a Federal position of arbitrary development and one where local interests, State and those under the State, are called in to cooperate, it is my personal impression that in many quarters it is assumed that the Federal Government as a matter of right under the Constitution, and as a matter of duty, must step in and is the logical one to take care of all those things. It is my understanding, further, that that is not agreed to by all constitutional lawyers. Quite far from that. There enter into that picture some aspects of law which I am not competent to discuss in detail, but not everyone would agree that the Federal Government has the authority to step in.

For instance, as to flood control, except where interstate commerce is concerned. Where it is not concerned and where any effects on commerce are local, then it might be true, in the instance that the chairman referred to, that if they cannot get together, they would have to stew in their own juice for a while until the need became great enough so that it could be resolved on the local level. That is on the assumption that no features of interstate commerce are involved.

Mr. ANGELL. Mr. Chairman, I raised the point of Hells Canyon not for the purpose of attempting to come to any conclusion on the merits of the issues involved there, but merely in that it may bear on the general principle of what participation of local interests there should be in projects of that sort, because this committee is considering that problem as a matter of policy and not as a matter of the merits of any individual project.

Mr. DONDERO. Mr. Chairman, may I inquire at that point?

Mr. JONES. Mr. Dondero.

Mr. DONDERO. What reason can you give, if any, as to why the Federal Government should insist upon the development of a project which could be done locally by a municipality, or by a private company, or by private investment? Take Hells Canyon, for example. For what reason, if any, should the Federal Government take priority over all others and deny them the right to develop water power?

Mr. WHITMAN. We do not think they should.

Mr. DONDERO. Neither do I.

Mr. JONES. Let me ask you a question, Mr. Whitman, along that line. What do you recognize as the interest of the Federal Government on a stream such as the Columbia River? What embraces that philosophy that the Federal Government holds the obligation first to the private utility over the right of the Federal Government to execute works to carry out the same program?

Mr. WHITMAN. I think in cases of that kind you possibly have projects which cost more than private utilities could finance, but as long as a private utility could finance a project and was willing to finance the project and would do it in such a way as would make the best possible use of that water, I would say the private utility should have the precedence, or a State, if the State wanted to do it, or if a municipality wanted to do it, then the municipality should have the precedence.

Mr. JONES. Is there any application pending for a municipality to acquire a Federal license to operate generating facilities at that point?

Mr. WHITMAN. I do not know of any. No.

Mr. SCHEIDENHELM. There is one in the basin.

Mr. JONES. Going one step further, suppose, for instance, that all of the private utilities were to come in and make application for proposed sites with generating possibilities on streams throughout the country. Then should the Federal Government get out of the development of projects for the simple purpose of getting generation of hydroelectric power?

Mr. WHITMAN. You are asking me personally?

Mr. JONES. Yes.

Mr. WHITMAN. Personally I believe along with Thomas Jefferson that that people is governed best that is governed least.

Mr. JONES. I do not think Thomas Jefferson recognized the philosophy that the navigable streams in this country belonged to anyone but the Federal Government. I think he supported the Internal Improvement Act in which that whole question was raised in the Washington administration. I believe such a strong advocate even as Alexander Hamilton espoused the thinking that supported the right of the Federal Government.

Mr. WHITMAN. I believe the Federal Government has the right to go in on these interstate streams, but——

Mr. JONES. You recognize the property right vested in the Federal Government by the Constitution in those properties?

Mr. WHITMAN. I am not enough of a lawyer to answer that, sir. You ask me some engineering question and I will answer you, but I cannot answer that.

Mr. SCHEIDENHELM. May I say something to the chairman on that?

Mr. JONES. Yes.

Mr. SCHEIDENHELM. It is my understanding that the Federal Government has no property right in a navigable stream except where there may be public lands involved, or lands in trust for the Indians.

Mr. JONES. Have you ever read the Ashwander case, Colonel?

Mr. SCHEIDENHELM. Yes, sir.

Mr. JONES. Does it recognize any property rights in falling waters on navigable streams?

Mr. SCHEIDENHELM. It is my understanding that that case recognizes the Federal right in the raw water power which was created by the construction of a dam for improvement of navigation, but not by reason of a property right in the stream or in the land under the stream.

Mr. JONES. I recognize the rights of the States with respect to the property under the stream, but the right to construct these projects comes from the right of a navigable stream which invests paramount interests in the Federal Government for development.

Mr. SCHEIDENHELM. It is my understanding that the Federal Government has the right, so held by the courts, to develop any stream, navigable or otherwise, in the interests of interstate commerce.

Mr. JONES. Let me ask you a further question. Is it necessary for the Federal Government to make application to the Federal Power Commission to acquire a license for the purpose of building a dam?

Mr. SCHEIDENHELM. No.

Mr. JONES. Does that not recognize within itself the authority of the Federal Government to undertake construction of hydroelectric generating units?

Mr. SCHEIDENHELM. I would suppose it is evidence merely of Congress delegating to the Federal Power Commission only certain duties or responsibilities of Congress, but nevertheless——

Mr. JONES. What does the Federal Power Commission grant in a license?

Mr. SCHEIDENHELM. It is my understanding that in effect it gives the consent of Congress so far as navigable streams are concerned. It gives the consent in behalf of Congress—a delegated consent to the construction of an obstruction to the navigable capacity of a navigable stream.

Mr. JONES. Does not the applicant when he files an application recognize the interest of the Federal Government as being superior to any interest he might have as an individual?

Mr. SCHEIDENHELM. So far as concerns navigation or interstate commerce.

Mr. JONES. Do you know of any litigation that has been initiated based upon the premise that the Federal Government does not have a paramount interest over a State or local community with respect to the construction of projects such as we have been talking about?

Mr. SCHEIDENHELM. You are not talking merely about a power project or a navigation project? I should have said, you are not talking merely about a navigation project, sir?

Mr. JONES. I am talking about the construction of a dam on a navigable stream.

Mr. SCHEIDENHELM. I feel embarrassed because I am not a constitutional lawyer, but my understanding is that that is not the case.

Mr. JONES. Of course, our whole discussion is rather academic, so maybe we had better leave it. I do not know all the answers either.

Mr. ANGELL. May I ask this one question?

Mr. JONES. Mr. Angell.

Mr. ANGELL. Mr. Scheidenhelm, it is your understanding, if I understand what you said, that the sole right the Federal Government has is due to the commerce clause in the Constitution in the regulation of commerce on these navigable streams, and aside from that it has no control or no inherent rights?

Mr. SCHEIDENHELM. Except where there are public lands, or lands held in trust for the Indians.

Mr. ANGELL. That is a different proposition. I am talking about a navigable stream with no lands involved. Is there any decision by the Supreme Court recognizing the power of the Federal Government to construct dams on navigable streams solely for the purpose of generating hydroelectric power? Without any connection with navigation, reclamation or flood control, or any other purpose, but solely for the purpose of generating hydroelectric power.

Mr. SCHEIDENHELM. I believe it is a fact that there is no such decision which turns on that point.

Mr. ANGELL. That is my understanding.

Mr. JONES. But it is the further understanding that the Government does have that authority and this has never been questioned, has it?

Mr. SCHEIDENHELM. I think it has been questioned time and again, sir.

Mr. STEED. Mr. Chairman.

Mr. JONES. Yes, Mr. Steed.

Mr. STEED. I would like to get the opinion of this witness on a problem we have in Oklahoma. I am sure you are familiar with the over-all picture of the Arkansas-White-Red River watersheds and the fact that we have an interstate agency that seeks to coordinate all of the various activities on these main stems and their tributary streams. In that watershed, and mostly in the State of Oklahoma, is a tributary stream known as the Grand River. The first construction on Grand River was a dam built by the State of Oklahoma and paid for by self-liquidating bonds under a State law creating the Grand River Dam Authority.

Mr. SCHEIDENHELM. The Pensacola.

Mr. STEED. That is right. As you know, that project was built and it is now operating, and the State is in the business of producing and selling the power from it. The dam also acts partly as a flood control dam.

Downstream the Government is now in the process of completing the Fort Gibson Dam, which also is a flood control and hydroelectric power project. In between these two dams there are proposals for two others, one known as Tenkiller and the other Markham Ferry. The State of Oklahoma would like to construct one or both of these two dams. At the present time it has been unable to work out any arrangement with the Government to permit the State of Oklahoma to issue self-liquidating bonds and construct one or both of these dams. The result is that in the Senate our Oklahoma Senators have introduced legislation which may finally come to this committee, authorizing the transfer of the right to construct one or both of these dams to the State of Oklahoma under similar terms that were given when the Grand River Dam itself was built, that is, the Pensacola Dam.

What is your opinion, or your position, in connection with a matter of that sort? It is of vital concern to the State of Oklahoma because most of the stream is within the State, and yet it is of concern in the flood control overall program because it is a very important part of these three great watersheds throughout which a vast program of development is in the process of being carried out.

The State of Oklahoma would of course agree, as it has in the case of the Grand River Dam, to operate these dams in keeping with good flood control practices, but also is primarily interested in the power that will be produced from it. When all four of these dams are built and in operation the process of using the same water four times as it goes downstream will be developed. Part of it, because Fort Gibson is already federally owned and operated, will be disposed of through what is known as the Southwestern Power Administration. The part produced under Grand River Dam is being disposed of by

the Grand River Dam Authority, owned by the State of Oklahoma. That is an important matter in our State and I think it comes directly to this problem you have been discussing this morning. Of course, personally I think the State of Oklahoma should be allowed to proceed with the construction of the part of the work that it wants to do. I would be interested to know what comment you have to make on that particular situation, since I am sure it is going to be a matter for this committee and the Congress to consider before we are finished with it.

Mr. SCHEIDENHELM. That is a point on which the Engineers Joint Council has squarely a recommendation. It was not included in the statement because it was understood that that subject would probably not be of immediate interest to the committee, and in that we were apparently mistaken. But the material is in the full report.

I read the major proposition:

> Water resources development should wherever feasible be by local enterprise, governmental or private. (Appendix IX, Item 2, pp. 195–6)

Then there are given the reasons for that. That is definitely the position of the Engineers Joint Council. So that as applied to that particular case, unless there were facts that do not appear on the surface, the recommendation of the Engineers Joint Council would read squarely in favor of the State of Oklahoma as regards the Markham Ferry development.

Mr. STEED. I understand. Yes, sir.

Mr. SCHEIDENHELM. I would be glad to give the remainder of that where the reasons for it are listed, if that is desired.

Mr. STEED. No. That answers the point I had in mind.

Mr. MACK. Mr. Chairman.

Mr. JONES. Mr. Mack.

Mr. MACK. Colonel, I recall in the case of Albeni Falls Dam that the dam is expected to produce 42,000 kilowatts of electricity at the dam site. The Engineers claim if that dam is built it will produce 42,000 kilowatts of electricity at the dam site and about 200,000 kilowatts downstream as a result of storage. I am wondering if there is not a little difference in the goal sought by the private utility and the goal sought by the Government in this respect. The utility is concerned primarily with getting as much electricity at the dam site for as little expenditure as possible, and solely at the dam site, whereas the Government is concerned with the power developed by the whole stream. Is that not true?

Mr. SCHEIDENHELM. There are in the United States, of course, various streams on which private interests have dam after dam. In that respect the situation is essentially like that which you referred to on the major stream, the Columbia.

In respect of the Albeni Falls project, on one of the tributaries, I think one needs to take into account the fact that there is provision in law whereunder any beneficiary, other than the Federal Government, of storage upstream must compensate the owner of that upstream storage, whether that be Federal or a licensee under the Federal Power Act, provided the upstream storage is owned either by the Federal Government or by a licensee.

Mr. JONES. Will the gentleman yield at that point?

Mr. MACK. Yes.

Mr. JONES. In making estimates of benefits on that type of project do not the Corps of Engineers and the Department of the Interior take into account the increased generating capacity on the lower projects in coming up with the estimate of benefits of the proposed project on the upper reaches of the stream?

Mr. SCHEIDENHELM. I think so.

Mr. JONES. By the same token the licensee of a project, privately operated, must make reimbursement to the Federal Government based upon the increased generation that occurs by virtue of an installation being built further up the stream.

Mr. SCHEIDENHELM. Yes, or reimbursement——

Mr. JONES. And that fact is taken into consideration in estimating the ratio of benefits to costs?

Mr. SCHEIDENHELM. That is true.

Mr. JONES. In other words, the licensee pays to the Federal Government for the increased water available, or the increased generation furnished, based on an annual estimate. Is that correct, sir?

Mr. WHITMAN. I could not tell you.

Mr. SCHEIDENHELM. That is true, and it applies also to the case of an upstream storage development owned by a State or a subdivision of a State, or private parties, where they are under Federal license. I believe it does not apply where they are not under Federal license.

Mr. JONES. Where they are not under Federal license?

Mr. SCHEIDENHELM. I believe it does not there apply. That is when the upstream one is not.

Mr. JONES. There is a disagreement within the Commission itself as to the reimbursement of a private operator who has a project on the upstream reaches for benefits to the Federal Government. In other words, at the present time the Federal Government is reimbursed. If it is a private licensee he is not reimbursed.

Mr. SCHEIDENHELM. I do not understand that is true, sir. With a private licensee the provision is there in the law for reimbursing that private licensee.

Mr. JONES. All right. Let me give you an example. Suppose that the stream is running in this direction [pointing]. This is a licensee. The Government builds a reservoir here [upstream]. The private licensee pays the Federal Government for the increased stream flow based on the increased generation. Is that right?

Mr. SCHEIDENHELM. That is true.

Mr. JONES. If the reverse is true, if this is a Federal agency operating this dam [downstream] and a licensee comes in and operates this dam [upstream], then the Federal Government does not pay the licensee on the upper reaches.

Mr. SCHEIDENHELM. That is true.

Mr. JONES. And there is disagreement among the Commission on that point.

Mr. SCHEIDENHELM. That I do not know. The law, it would seem to me, is very clear on the point. I did not know there was any disagreement.

Mr. MACK. Colonel, going back to Albeni Falls dam the principal interest of the private company is to get as much power as possible from the dam site, at the least cost possible. The people's interest, on the other hand, is to get the greatest potential amount of electricity from the entire stream.

In your opinion should there be some over-all agency that would designate the type of structure that would have to be built in order to provide the maximum water storage for the downstream dams?

Mr. SCHEIDENHELM. There is no doubt those who participated in this Engineers Joint Council report believe in planning by the basin, so to speak, so as to get a comprehensive development and one that will be the best from at least the present-day viewpoint, and for the future so far as can be foreseen. Whether that should be in the form of a precise arbiter is another question, because that would be the same as saying that a given agency is in effect omniscient with regard to what should be done; but there would, I suppose, be available recourse to the courts in the event there were, or there were believed to be, some unreasonable plan, not leaving room for a development downstream that would be proper.

But on the general proposition of basin-wide planning we would be in thorough accord that that should be the case, but that it should not be merely the Federal Government; that it should not have the Federal Government in the role of an arbiter.

Mr. MACK. I understood you or one of your associates to state that the Missouri Valley was such a vast project, that the full development of it would cost about $9,000,000,000, that it is too large to be undertaken by private enterprise and is therefore naturally a Government undertaking. Would that also be true of the Columbia River with its multiplicity of dams and the enormous cost involved? Would it even be possible for a group of private companies to carry out that development?

Mr. SCHEIDENHELM. May I answer that this way—and I cannot answer that from the book, so to speak, but I have to answer that from the personal standpoint because the report of the Engineers Joint Council does not cover that precisely.

I would not personally agree with Mr. Whitman, if he intended so to imply, but I do not think that he did imply, that the Missouri situation, and I would add to that now the Columbia situation, is one where private development cannot undertake the individual projects. I would personally readily concede that as of this time you could not get any private interest or any group of private interests to underwrite the complete development of the Missouri or of the Columbia. But assuming that there is economic soundness there—and that is the principal rub—but assuming that there is economic soundness, I think it is now beyond question that private capital can be found to make development of the individual projects as they come along, i. e., when and as they should be made.

I take it you are speaking largely of power, and my answer is directed to that. There are at least two instances now that show that that is the fact. I mean by that they show that private capital in large sums is available. Here are two instances: One is in the case of the Niagara Falls hydroelectric development, which would run over 1,130,000 kilowatts, I believe, where a group of power companies in my State, with whom I have nothing to do, made a positive offer, addressed primarily to Congress, I think, and possibly to this committee, for developing that, involving a sum of money as great as that of any individual dam on either the Missouri or the Columbia. It is about $350,000,000.

The other instance is this, and I think I am not speaking out of turn because items have been——

Mr. JONES. Colonel, you are talking about individual projects. I believe Mr. Mack's question was on the treatment of an entire river. Is that correct?

Mr. MACK. Yes. I meant the entire stream.

Mr. SCHEIDENHELM. If I am completely off the beam——

Mr. MACK. His answer is right, though. I think it is a good answer.

Mr. SCHEIDENHELM. Then may I finish it?

Mr. MACK. You go ahead, sir.

Mr. SCHEIDENHELM. The other instance is this, and I would not speak of it if there had not been items in the press recently, and only yesterday in the New York Journal-American there was an item to the effect that a group of private power companies had submitted a proposal to the Atomic Energy Commission to furnish the power for a project which has not been approved yet by the Congress, but is, as I understand it, to come before the Congress possibly before this session is over—a project that is tremendous and would involve delivered power of close to 2 million kilowatts. That proposal is in the amount of about $400,000,000. That in itself is a strong indication, and to me it is proof, that when projects are sound economically, private capital can undertake them.

Mr. ANGELL. Will the gentleman yield?

Mr. MACK. Certainly.

Mr. ANGELL. Has the Engineers Joint Council taken any position on the so-called River Authority such as the TVA, as to whether they are sound, or whether they should be extended, let us say, to the Missouri and Columbia and other river basins?

Mr. SCHEIDENHELM. No. The Engineers Joint Council has taken no position on organization aspects.

Mr. ANGELL. Have you any opinion as to the efficacy of such a procedure?

Mr. SCHEIDENHELM. Have I personally?

Mr. ANGELL. Yes.

Mr. SCHEIDENHELM. I have never had to come squarely to the question. I know that my inclination is against them, but I ought to know all the facts that are involved; by and large I think it is not consistent with a proposal for a maximum of local participation, and I am emphasizing now the financial aspect because, if we can judge by the Tennessee Valley Authority, for instance, there is no participation there by any State, municipality, local district, or private capital.

Mr. ANGELL. I think some three Governors from Western States appeared before our committee at previous hearings, although not before this special committee, in opposition to an authority for the Columbia River. As I recall it, their main reason was the lack of local participation and local control that would result from a valley authority.

Mr. STEED. Mr. Chairman, may I ask one question?

Mr. JONES. Are you through, Mr. Angell?

Mr. ANGELL. Yes; I am through, Mr. Chairman.

Mr. JONES. Mr. Steed.

Mr. STEED. You made reference to the Niagara River. Some hearings have been held this session by this committee on that, and three

bills are now pending before the committee dealing with that project on that river. One is to permit the private companies to proceed with the development. Another is to turn it over to the New York State Authority. Another would, as I understand it, provide for the Federal Government to construct and operate the power unit.

In view of the report which you have made, which one of these three proposals now pending would the views of the Engineers Joint Council apply to—the State authority, the private capital, or the Federal Government?

Mr. SCHEIDENHELM. I think through its report the Engineers Joint Council would be saved the embarrassment of having to choose between two of them. Its policy would clearly be in favor of either the private capital or the State, but not the Federal Government.

Mr. DONDERO. Mr. Chairman, I want to ask this question because I think it is pertinent inasmuch as we are discussing policy.

Do you know of any other instance, with the exception of two, where the Federal Government has authority in law to develop hydroelectric power: One, the Government only has a right to develop and sell hydroelectric power in connection with a dam where the production of that power is incidental to flood control, navigation, reclamation or irrigation. That is No. 1. The other is only where the national defense is concerned.

The question is, do you know of any other instance where the Federal Government has any authority to develop hydroelectric power, anywhere?

Mr. SCHEIDENHELM. I would suppose that there is a third in the respect that a dam on Indian lands would in effect be constructed by the Federal Government.

Mr. DONDERO. That is for the purpose of the development of the public land.

Mr. SCHEIDENHELM. Yes, in effect.

Mr. DONDERO. Let us take up the question of Niagara power, which my able colleague has referred to. On the question of Niagara power, that water has become available through a treaty that has recently been made with the Dominion of Canada, but is there anything in connection with that proposed development of power so far as flood control, navigation, reclamation or irrigation is concerned at Niagara?

Mr. SCHEIDENHELM. None.

Mr. DONDERO. Not a single thing. So that power stands naked and alone.

If the Federal Government has the authority to develop that power without any of these other subjects being involved, then certainly the Federal Government is in the power business against its own citizens.

Mr. SCHEIDENHELM. I would suppose so, but I would suppose that first of all there would be faced and perhaps settled the constitutional point as to whether it has that power.

Mr. DONDERO. I think that question is involved in this question of Niagara power.

Mr. JONES. Colonel, a moment ago on the query of Mr. Angell as to whether or not you were for or against the Tennessee Valley Authority, your answer was that you would be against that type of development, and particularly the Tennessee Valley Authority, be-

cause it did not give recognition to local interests. I presume that you have in mind some conflict that must have come about between the Tennessee Valley Authority's operations and that of some local agency of government. Now, will you explain whether conflict comes about between the Authority and the local sovereignties?

Mr. SCHEIDENHELM. I do not think, if I may be pardoned, or I am inclined to think that the chairman did not get my answer quite as I intended it. Possibly it was my fault.

Mr. JONES. You restate it so that the chairman can understand what you were talking about.

Mr. SCHEIDENHELM. I said that I am inclined against the Authority because it does not leave room for local and particularly private development; but the reason it seems to me is one that should be stated, and as long as it is a personal opinion I expressed perhaps it may be permitted if I gave my reason.

My reason is this: That over several decades in this country we have more and more delimited that sector of our national economy which contributes taxes for the support of the Central Government, and we have more and more increased that sector of the national economy which lives off the taxes paid by others.

Mr. JONES. Do you realize we are in the area served by the Tennessee Valley Authority paying five times more taxes than the national average? That is, in the area in which the Tennessee Valley Authority operates.

Let us go back to local sovereignty. Do you know that all of the governments and States where the Tennessee Valley Authority has served have commended the Tennessee Valley Authority for its cooperation with the local governments?

Mr. SCHEIDENHELM. I have not suggested that there is not cooperation there.

Mr. JONES. As a matter of fact, there is not a single mayor or county government in the entire area that complains of a trespass of the Tennessee Valley Authority on the local sovereignty. The whole theme of the Tennessee Valley Authority has been local cooperation and local participation in all of their endeavors.

Did you not sense that when you were down there?

Mr. SCHEIDENHELM. I believe that is true. I have read enough to believe that that is true. I think there is one exception, but the chairman will know if I am wrong on that, and that is there has been some complaint about not getting enough payment in lieu of taxes. My point still remains, though, sir. I am not speaking of the failure to cooperate or take into account the local people there. I am not prepared to enter into the pros and cons of the Tennessee Valley Authority in particular, but the fact is that where there is Federal development there is removed from the possibility of Federal taxation as well as the greater part of local taxation, a considerable portion of what would be taxed if it were built by private capital.

Mr. JONES. Should that be the guiding rule for this committee to follow, that is, to look and see what tax returns are going to be produced, and not look at the works that need to be accomplished in a given area in order to perfect full utilization of a stream the size of the Tennessee River?

Mr. SCHEIDENHELM. No; I would not say that.

Mr. JONES. In all of the recommendations that you have had here have you analyzed the operation of the Tennessee by the Authority with respect to estimates of costs and actual costs of projects?

Mr. SCHEIDENHELM. No. This work of the engineers joint council has not concerned itself with any one project, or with any project.

Mr. JONES. Have you taken into account the estimates of costs of the Corps of Engineers and the Department of the Interior on their projects? You speak of scheduling projects with an estimation of cost being in disproportion to the actual cost. I just wondered if you had made any comparison of the Tennessee Valley Authority with the work of the Army Corps of Engineers and the Department of the Interior.

Mr. SCHEIDENHELM. There has been none made in connection with this report, but I do know that the estimates of the Tennessee Valley Authority have been overrun to a far less degree than that of either the Corps of Engineers or the Bureau of Reclamation. However, I think in fairness it is also well to note that the estimates to which reference is made, and when the Tennessee Valley Authority gives a figure for the cost, that that estimate is a——

Mr. JONES. A seasonable estimate, is it not? It is within season.

Mr. SCHEIDENHELM. Yes. It is practically up to date. It is just before they are ready to construct.

Mr. JONES. Would you suggest that it would be a wise course for this committee to undertake, that is, to try to get these projects within season where the estimates will have some semblance to the final costs rather than projecting them over an average of 10½ years before they are undertaken?

Mr. SCHEIDENHELM. I think they ought to be reviewed and reappraised before there is any step taken toward authorization or appropriation. The recommendations in this report and in the statement submitted are precisely to that effect.

Mr. JONES. Doctor, we are going to come back to you because I see we are not going to finish before 1 o'clock if we do not let you proceed. You go right ahead.

Dr. HOAK. The first proposition that we have considered has to do with economic justification, which is an important item in the consideration of any water-resource development project.

The Federal Government should not undertake any water development which is not economically justifiable in the sense of being financially justifiable. For determining such justification, there should be established criteria which are applicable to all functions of such development and to all Federal agencies concerned. Reappraisals of such development should be made from time to time, treating separately and realistically the benefits and the costs—by components where the development is multipurpose.

That is the broad general proposition dealing with economic justification. We proceed then to a proposal having to do with benefits.

In the appraisal of a water-resources development and its component funtions (if the development be multipurpose), the benefits should be expressed in average annual monetary terms. For the purpose of determining economic justification, the benefits to be taken into account for any given function must not exceed the alternative expenditure for the accomplishment of that function. The alternative expenditure is the average annual cost of the least expensive of the

reasonably available, physically feasible, alternative means for the accomplishment solely of that function.

We proceed then to a proposal having to do with the required margin of benefits over cost.

In order that Federal water-resources developments may qualify as being economically justified, the ratio of tangible benefits to cost, each on an annual basis, should not be less than 4 to 3 (1.33) when based upon determination of benefits and cost in accordance with the EJC recommendations.

Mr. DONDERO. Do I understand that the recommendation is that the benefit should be $4 where $3 are expended to produce it?

Dr. HOAK. That is correct.

Mr. DONDERO. In other words, a margin of 25 percent?

Dr. HOAK. One-third.

Mr. DONDERO. 33⅓ percent?

Dr. HOAK. Yes.

In cases where the factors entering into the ratio cannot be estimated closely or where they may not be realized for a long or an indefinite period in the future, the corresponding ratio should not be less than 2 to 1 (2.0). Depending upon the relative probabilities of realizing within a reasonable period the benefits and costs involved, the requirements, as to the ratio, may appropriately be intermediate between 4 to 3 and 2 to 1.

Mr. DONDERO. I really did not get the point that you made, that is, the condition where you think that the benefits should be 2 to 1. Would you repeat that?

Dr. HOAK. The point is this, sir: Where it is difficult to estimate, as closely as should be, the benefits that are likely to accrue from a project, or where circumstances of the future may modify present estimates, then a larger margin of benefits to cost should be employed. We think under some circumstances it is wiser to use a ratio of 2 to 1 than it is to use a ratio of 4 to 3.

Mr. DONDERO. If the project does not show that possibility you do not think it should be adopted?

Dr. HOAK. It is sort of a margin of safety.

Mr. DONDERO. Like the reserves in a bank?

Dr. HOAK. Yes.

Now, the question of the effect on projects caused by changes in price levels is an important one. We make merely this comment: That in general, the adjustment of both benefits and costs by the same multiplier is improper. I think it might be well to amplify that statement somewhat by saying what we mean by the impropriety of using the same multiplier against both benefits and costs.

In reappraising benefits and costs due to any changes in price levels, it is not realistic or proper merely to apply to each the same multiplier or price-level index. The result would be to retain the same ratio (benefits to cost) regardless of price level. There is no necessary relation between the pertinent variations on the benefits side of the ratio as compared with those on the cost side. In this connection, it needs to be borne in mind that costs become fixed as of the time of construction or expenditure, whereas benefits will vary from time to time in the future, depending upon, not merely changes in price level but also, technological progress in respect of the alternatives for the

several functions of a given water development. Each case must be considered by itself.

Our statement on justifications by projects rather than by river basins is as follows:

Individual developments or projects, whether of single or multiple purpose, should each be subject to the standard criteria of economic justification including margin of benefits over cost, except that such as are physically and of absolute necessity interdependent may reasonably be treated as a unit for purposes of economic justification. No exception should obtain as concerns general or comprehensive plans for a given stream or river basin.

On the method and period of amortization we have this to say:

As the specific method of making actual or hypothetical payments in liquidation of the investment in Federal water developments and in computing their costs, whether or not to be reimbursable to the Treasury, amortization should be on the straight-line basis and involve a period of not more than 50 years.

It might be pertinent to cite the reasons we have given for recommending a straight-line method of amortization.

(*a*) It gives the taxpayers earlier benefit of repayment, i. e., a greater portion of the repayment occurs during the lifetime of the generation of taxpayers whose taxes contributed to the investment.

(*b*) The straight-line method is more conservative, for during the early life of the project the charge for amortization is greater than for the alternative sinking-fund and equal-annual-payment methods—each of the latter being based on compound interest.

(*c*) Writing off the investment more rapidly during the earlier part of the amortization period, there would be less loss in event of unanticipated obsolescence.

Those are the three reasons which seem to indicate that the straight-line method would be preferable for amortization.

We have a proposal regarding the charge for use of money:

The charge made for the use of money should cover all aspects of all such cost. Commonly such charge is designated "interest." However, interest on borrowed money is only part of the cost. There are additional costs, such as those of placing loans, levying, collecting, and auditing Federal taxes, etc.

Now, dealing with taxes themselves, we say:

In computing the annual costs of Federal water developments, for determinging economic justification or for any other purpose, there should be included amounts equivalent to the taxes which would have to be paid were the lands, physical improvements and business, if any, not exempt from taxation, whether Federal, State, or local. So far as practicable, lands and rights subject to taxation when acquired by the United States for such developments should continue to be subject to the same requirements of local or State taxes (or payments in lieu thereof), including changing assessments and rates of taxation, as would obtain if the lands and rights were privately owned, i. e., the United States should actually pay such taxes or the equivalent thereof. In the case of Federal revenue-producing water developments, the principle should be extended to provide for the payment of State and Federal income and excise taxes or their full equivalents.

Mr. MACK. That applies to all Federal lands taken off the tax rolls?

Dr. HOAK. Yes.

99217—52—pt. 3——12

Mr. MACK. Twenty-four percent of the lands of the United States is now owned by the Federal Government. This has proved a hardship to most of the Western States, where at least 50 percent of the land is owned by the Federal Government.

Mr. DONDERO. That means the remainder of the populace in the particular State or county or township must bear that additional taxation which the Federal Government does not pay on its land.

Dr. HOAK. That is correct.

Mr. DONDERO. In any case, it works a tremendous and serious hardship on the people.

Mr. MACK. In the State of Nevada 87½ percent of the entire State is in Federal ownership.

Dr. HOAK. Yes. So I understand. Our consideration of this subject does not comprehend those public lands which have been in the possession of the Federal Government for a long time. What we are concerned with here is the removal of State and private lands which were tax producing, by the Federal Government.

Mr. DONDERO. Of course, if the Federal Government is taxed upon its projects the old-time argument of cheaply furnished power would vanish into thin air, because then they would be on the same basis as the citizens of that Government.

Dr. HOAK. Yes.

Mr. CURRAN. Mr. Chairman, I would like to raise some questions on this point before getting into the authorization element.

Doctor, the recommendation is that in the appraisal of projects the benefit-cost ratio should be used. I would like to know, is that a standard procedure for anything other than Federal pojects? Is there some equivalent to that appraisal for non-Federal projects, and for private projects?

Dr. HOAK. Certainly in any private enterprise that expects to continue in business, when a new development is undertaken there is some method of appraisal of the return from that project in terms of some factor or other which will differ from business to business. But certainly in deciding whether to expend a company's money for a specific development the company will be quite sure, if it is a sound company, that it is going to receive a requisite return upon its investment.

Mr. CURRAN. I understand that, I probably did not make my question clear.

Is this some benefit-cost ratio procedure that is used so much throughout our Government used in private enterprise? Is that sort of procedure used or do they use some other procedure? Is the benefit-cost ratio the best method that can be used to evaluate these Government projects or is there some other procedure that might be used?

Mr. SCHEIDENHELM. I think in business, and ordinarily business is conducted in terms of money and dollars, there just is not any question but that that is the measuring stick. It is a rare exception when there is some consideration other than a greater benefit than cost expectation. I could possibly conjure up in my mind some exception to that, but it is generally so rare that that does apply.

Mr. CURRAN. What I am getting at is this, is the particular procedure used by Federal agencies just as satisfactory as any other procedure in trying to ascertain that the benefits are in excess of costs?

Mr. SCHEIDENHELM. It is more satisfactory. But I think it is well to bear in mind that business would not be content, and we think Government should not be content with a mere minimum excess of benefits over cost. That is just a matter of swapping dollars. There is no gain and there is all of the risk of one's being wrong in estimates somewhere, particularly if the costs overrun, so that business would not conduct itself on that basis. They have to see something more than the cost, otherwise they would not survive.

Mr. WHITMAN. I might say in connection with that matter that back in 1933 and 1934 I was chief engineer of the West Penn Electric Co. The cost of current and the fixed charge was so high that many of those big industrial companies out there were paying a very high rate for the current. They were considering the possibility of building their own power plants. What they considered was that they would not build their own power plants unless they could get back the cost of those power plants in from 3 to 5 years. So that there were practically none of them, or there was only one that I know of that built its plant, and it was very sorry that it did.

Mr. CURRAN. That would be a different procedure, wanting to recover the investment in 3 to 5 years; using a favorable benefit-cost ratio, even a 4 to 3 ratio, is going to require a considerably longer period to recover investment.

Mr. SCHEIDENHELM. Yes, but is it so different in principle?

Mr. WHITMAN. Yes, the principle is there. I might say we were talking about taxes. Again back in 1935 or 1936 I was down in the Tennessee Valley Authority in a case down there brought before Judge Grubb. I was down in Birmingham, Ala., in the case of the Tennessee Valley Authority when stockholders brought suit against the Tennessee Valley Authority.

It was brought out in that suit that that was supposed to establish a yardstick in those days on the Tennessee Valley Authority's prices for electricity. The Tennessee Valley Authority said they were going to pay taxes just like the private individuals. They were going to pay 5 percent taxes on their income. Well, the private companies were paying 15 percent on their income. That was testified to in that suit.

With regard to private developments down there there was a private company on one of the side streams. When it had already developed one dam they wanted to develop a second dam. The Tennessee Valley Authority in order to keep them from developing that second dam bought a lot in a small town which would have been flooded, and this company could not flood Government property. So that was their method of prohibiting this company from developing this project.

Mr. MACK. In your references to 5 percent or 15 percent of income you are referring to gross income and not net income. Is that right?

Mr. WHITMAN. That is right—gross income.

Dr. HOAK. I think the significant point that is involved in a discussion of benefit-cost ratios is simply this: That unless a project is specifically devoted to the national defense, the Government should, just as much as private industry, operate its developments at a net profit. The reason for that is when the Government operates a development at a net profit it increases the national wealth. When

the Government operates a project at a net loss it decreases the national wealth.

Mr. CURRAN. Doctor, on the bottom of page 7 with reference to the period of amortization you state:

> The period of amortization, although recommended to be limited to a maximum of 50 years, should in no case extend beyond the reasonable expectancy of life of the development or its components.

You propose a maximum period of 50 years?

Dr. HOAK. We feel 50 years should be the maximum.

Mr. CURRAN. Fifty years is the maximum?

Dr. HOAK. Yes, and in some cases it might be desirable to use a shorter period where the life of the project were shorter, or some part of a multiple-purpose project might have a shorter period of life than the whole project. Therefore, the portion of the project that is estimated to have a shorter life than the whole project should be amortized over a smaller number of years.

Mr. CURRAN. So the fact that a structure like a dam or levee may be expected to stand 100 years or more should not be considered in the amortization and the period should not carry beyond the 50 years in any event?

Dr. Hoak. We think that 50 years is a desirable maximum number for amortizing a project, even though the possibility of the project having a much longer life is recognized.

Mr. DONDERO. Have you finished your statement, Doctor.

Dr. HOAK. We have a section dealing with authorization.

Mr. DONDERO. I think we would like to hear you.

Dr. HOAK. We have a statement dealing with the subject of authorization of water developments:

Authorization of Federal water developments should be solely by Congress; should be of individual projects fitting into comprehensive plans for streams or basins, but authorizations (as distinguished from approval of comprehensive plans) should not be in blanket form; and should serve as an absolute limit on appropriations. As to new projects, in general there should be no further authorization until uniform policy has been adopted.

In amplification of that, we believe that, in view of the fact that there is no national policy dealing with the development of water resources, it would be wise to defer undertaking any new projects until a desirable uniform water policy has been developed by the Congress, We believe that authorizations of Federal water developments should become void if the project cost overruns by 20 percent the cost estimated at the time of authorization.

Mr. DONDERO. What do you advocate if it exceeds 20 percent of the authorization?

Dr. HOAK. If the cost, that is, the estimated cost, is overrun by 20 percent, the project should become void. I perhaps have not said that very clearly.

Mr. DONDERO. Or at least reexamine it.

Dr. HOAK. Yes. It should be reappraised and then returned to the Congress for reauthorization if the new circumstances seem to warrant it.

On limitations upon modifications by administrative agencies we say this:

Authorizations of Federal water developments should be Congressionally reviewed upon any substantial change in project.

Now, dealing with authorizations of Federal hydroelectric development we have this proposal:

Except for meeting the needs of the Federal Government itself, Congressional authorizations for Federal hydroelectric power construction should be predicated upon the cash income to the Treasury reasonably to be expected from the sale of power. In any case, authorizations should fully disclose the power purpose and should be solely by Congress itself.

Bearing upon the Engineer Joint Council recommendations covering avoidance of project planning, which may become useless, we say:

1. More thorough investigation prior to authorization, including investigation of economic justification. (See pp. 196–198 of full report.)

2. Requirement of greater margin of benefits over cost; see item A–3 above.

3. The setting up of a Board for Impartial Analysis and Appraisal.

Our next item deals with that Board, and we say:

There should be created a board for the impartial analysis and appraisal of Federal water projects and its review and report thereon should be prerequisite to the authorization or appropriation by Congress of or for projects of that kind.

Mr. DONDERO. Do I understand from that you would advocate a board being set up outside of the Federal Government?

Dr. HOAK. No.

Mr. DONDERO. The procedure now, of course, is for the Board of Army Engineers to go over the appraisal and the facts with regard to any project. What I am trying to get at is, do you recommend to this committee that a board be set up outside the Federal Government entirely?

Dr. HOAK. Our recommendation is that the board should be in a position to review decisions or recommendations by any agency. In the case of the Corps of Engineers they have a board of their own that reviews their projects, but it seems to me that that amounts practically to the Corps of Engineers acting as both judge and jury.

What we have in mind is a board whose personnel would be composed of individuals who had no connection with any Federal Agency.

Mr. DONDERO. That answers my question because I asked you if you would recommend to the committee that a board be set up outside of the Federal Government.

Dr. HOAK. Yes.

Mr. SCHEIDENHELM. I would think, Mr. Dondero, that it is not quite correct to say it would be outside of the Federal Government. That is, the recommendation is that it have official status and that it be a board responsible to either the Executive or the Congress.

Mr. DONDERO. But not connected with any governmental agency.

Mr. SCHEIDENHELM. Yes, independent of any agency.

Mr. MACK. The Army Engineers Review Board acts before the Congress authorizes a project and not afterwards, does it not?

Mr. SCHEIDENHELM. Always.

Mr. MACK. Is this essentially the same provision that is in the Hoover Commission report?

Dr. HOAK. It is something of the same thing. I do not think there is too much difference, is there, Colonel?

Mr. SCHEIDENHELM. The Hoover recommendation was positively to put this board——

Mr. MACK. In the White House.

Mr. SCHEIDENHELM. As an agency of the Executive. But the Engineers Joint Council itself takes no position on that point. I myself did not have any position on it, but I have come more and more to feel that, if it is to influence what Congress does, it will have to be an agency under Congress.

Dr. HOAK. We have a proposal dealing with allocation of costs:

There is pressing need for ascertaining, just as nearly as may be, the cost of fulfilling the respective functions of a Federal multi-purpose water development. For that purpose, distribution of costs in proportion to benefits is improper. For application generally and uniformly among Federal agencies, in apportioning the costs of jointly-used facilities, the proportionate-use-of-capacity method is recommended.

Mr. DONDERO. Would you like to enlarge on that a little? That is a very important point. Rather than the ratio of costs to benefits you think it should be on the basis of capacity to benefit?

Dr. HOAK. Yes. We have a paragraph or comment on that, Mr. Dondero.

The problem being essentially one of apportioning the costs of jointly-used facilities, such as dams, reservoirs, and water conduits, we recommend the proportionate-use-of-capacity method as affording a minimum of arbitrariness and a maximum of logic and equity. Thereunder the apportionment, among the primary components, of such joint costs (exclusive of the parts thereof attributable to incremental components, if any) is in direct proportion to the extent of use (of the capacity of the jointly-used facilities) to which the respective components are entitled. The method applies whether the costs to be apportioned are initial (i. e., investment) or annual.

Mr. CURRAN. Doctor, there has recently come to the attention of the subcommittee an allocation of costs that led to power rates recently approved by the Federal Power Commission for the disposal of electric energy in the area administered by the Southwest Power Administration. There were two sets of cost allocation figures used, one prepared by the Corps of Engineers and concurred in by the Bureau of Power of the Federal Power Commission, which came to a total of roughly $418,000,000. Of 12 dams, for 2 they used the allocation method that they called the "incremental-flood control basic," and for the remaining 10 the "separable costs-remaining benefits."

Before going on to what the Southwest Power Administration recommended, have you any comment on those two methods? Are those comparable to the methods of allocation considered by the Engineers Joint Council and by the ASCE?

Mr. SCHEIDENHELM. Neither of those methods is in accord with the recommendation of the Engineers Joint Council.

Mr. CURRAN. Neither?

Mr. SCHEIDENHELM. Neither of them. The separable costs-remaining benefits method is relatively new, at least so far as my information goes. It was born during the considerations of the Federal Inter-Agency River Basin Committee—its Subcommittee on Benefits and

Costs—which has come up with a tentative recommendation. That is a recommendation to the main committee and to the agencies, but it is a sort of compromise between what we would call a logical, straightforward method, on the one hand, and a method based on benefits, on the other. That is, these "remaining benefits" are the basis of subdividing those joint costs which are not attributable solely to any one component. That is the same as saying that that part is allocated on the basis of what the individual projects can afford, or what the individual components such as power, flood control, and navigation can afford.

On the incremental basis, which is the other one that you have mentioned, the allocation to power, if I understand correctly what was done, and I think I do, is merely that part of the project cost which is in excess of the cost of a different project, one which would accomplish all of the purposes except power.

Mr. CURRAN. The Southwestern Power Administration's allocation of about $218,000,000 was based on a number of methods. They used the "incremental flood control basic" method on five dams; "direct or exclusive power costs" on one; "percentage of benefits" on one; "ratio of power draw-down storage to total storage capacity" on three; and the "ratio of power benefits to total benefits" on two.

Mr. SCHEIDENHELM. One of those apparently is very close to what we recommend.

Mr. CURRAN. Which one is that?

Mr. SCHEIDENHELM. The ratio of the power draw-down to the total.

Mr. CURRAN. To the total storage capacity?

Mr. SCHEIDENHELM. Yes.

Mr. CURRAN. But the others are far from your recommendation?

Mr. SCHEIDENHELM. They are. The need for having something which can command respect, let us say, as well as for the logic back of it, is very clear from the fact that here the Corps of Engineers comes up with an allocation twice as great as did the Southwestern Power Administration.

Mr. CURRAN. Would you recommend that Congress specify rigidly how costs should be allocated or should there be some latitude given to the agencies making the allocation?

Mr. SCHEIDENHELM. The recommendation there is that in any event, willy-nilly, there should be an allocation made on the basis of the proportionate use of capacity method. If changes are to be made, such be shown subsequently, together with the reasons for them; but if any changes are made, that those changes themselves be subject to specific criteria and qualifications that must be met.

Mr. CURRAN. Would you have any recommendation as to what kind of agency of Government makes the allocation, that is, the construction agency, the power sales agency, or an independent agency, or would it make any difference?

Mr. SCHEIDENHELM. That is somewhat an organizational matter and is not covered specifically. That is, the answer to your question is not covered. Therefore I can merely give my personal view, which is that, if the general method, to prevail first, before there is any adjustment, is prescribed, then I would see no reason why the individual agencies should not initially follow that method out independently; but the Board of Review would among other things review that matter of cost allocation so as to make sure that there is reason-

able coordination and that the agencies do follow what is prescribed. The Board should then analyze also what is done by way of adjustment or change.

There are so many different things that can be done. For instance, if we take this Hells Canyon project which was spoken of earlier by Mr. Angell, I was interested to note in a quoted statement that the allocation there by the Bureau of Reclamation put upon flood control and navigation the capitalization of their full benefits. Those were the only two benefits, I think, other than power. That left the remainder to power. The result was to cut down power. It did not apply the same method to the three components. It resulted in a smaller allocation to power than would otherwise be the case.

Have I answered your question?

Mr. CURRAN. Yes.

Mr. WHITMAN. That is allocation of costs.

Mr. SCHEIDENHELM. Oh, yes. This is allocation of costs.

Mr. JONES. Dr. Hoak.

Dr. HOAK. We deal next with the selling price of Federal power and we have this proposition:

For power sold and for power-development licenses at Federal dams, the Federal Government should require and receive payment at rates not less than such as correspond to the appraised power value upon which the construction of the project was predicated, excepting only where the pertinent market prices ("market values") actually are less than such rates. The aim should be to secure, as cash income to the Treasury, the full value of the power as appraised at the time of authorization of or appropriation for the project.

Mr. JONES. Let me ask you a question there. What was the inspiration for this statement? Is it no true that the Federal Government makes rates based on the allocation of costs in investment to the hydrogenerating facilities? Do you have projects where that is not true?

Mr. SCHEIDENHELM. Where the Federal Government does not?

Mr. JONES. Yes.

Mr. SCHEIDENHELM. Some agency does it.

Mr. WHITMAN. That was not true on the original Tennessee Valley Authority dam down at Muscle Shoals. That dam and the power plant cost $60,000,000. They reduced the charge cost to electricity to $19,000,000. If a private company had built it they would have had to plan on the $60,000,000.

Mr. JONES. That was on Muscle Shoals?

Mr. WHITMAN. That was back about 1935 or 1936.

Mr. JONES. Did that take into account the over-all rates of all the projects or was it just based on the individual installation? You have to have some uniform rate.

Mr. WHITMAN. They determined on $19,000,000 as the rate base instead of $60,000,000, which a private company would have had to use in building that dam.

Mr. JONES. If the rates that were prevailing at that time for electricity sold by the private distributors were based on an investment cost you could justify it for about $2,000,000,000, could you not?

Mr. WHITMAN. At the Muscle Shoals Dam?

Mr. JONES. Yes.

Mr. WHITMAN. No, sir.

Mr. JONES. The Alabama Power Co. was buying it for about 2 mills, was it not, and selling it at 9 cents a kilowatt? If you are going to take into account the high-rate factors you could capitalize it at more than that $60,000,000, based upon any prior rates that were obtained on the sale of it from the Government, with that profit going to the private utilities, could you not?

Mr. WHITMAN. I do not recall the figures you gave about what it was worth, but all I know in connection with it is that in forming the rates—and this was just in the beginning when it was just Muscle Shoals——

Mr. JONES. Before they turned it over to the Tennessee Valley Authority; it was built during the war.

Mr. WHITMAN. No, sir. It was not built during the war.

Mr. JONES. It was started during the war.

Mr. WHITMAN. It was started during the war, and during the war they spent $3,000,000. It was completed in 1927 and it cost $60,000,000.

Mr. JONES. Yes.

Mr. WHITMAN. The excuse was that it was a war baby and the costs were higher because of that. As a matter of fact, during the war they only spent $3,000,000. The plant was not completed, I think, until 1927.

Mr. JONES. But it was started during the war, and that was justification for the original investment to build that Wilson Dam, was it not?

Mr. WHITMAN. It was not the Wilson Dam.

Mr. SCHEIDENHELM. Yes. It was the same.

Mr. WHITMAN. Yes, Wilson Dam. The TVA dam.

Mr. SCHEIDENHELM. Either that or navigation.

Mr. JONES. When it was turned over to the Tennessee Valley Authority it was recapitalized, was it not?

Mr. WHITMAN. Well, in the case on which I was down there, their rate base upon which they should earn was $19,000,000, while the actual cost had been about $60,000,000.

Mr. JONES. When it was transferred to the Tennessee Valley Authority did they not make an estimate as to the value of that plant for the Tennessee Valley Authority?

Mr. WHITMAN. Yes. They made an estimate which was the darndest estimate I ever heard of.

Mr. JONES. But the Tennessee Valley Authority did not do it.

Mr. WHITMAN. Yes; they did do it.

Mr. JONES. The Tennessee Valley Authority made the estimate?

Mr. WHITMAN. Yes. I was in the court case when the Tennessee Valley Authority presented their estimate. The Tennessee Valley Authority made the estimate.

Mr. JONES. And the value of the dam was not computed prior to their turning it over to the Tennessee Valley Authority?

Mr. WHITMAN. The cost of the dam was known and it was $60,000,000 for the dam and the steam plant.

Mr. JONES. Yes.

Mr. WHITMAN. And the rate base which the Tennessee Valley Authority worked out—they had based it on costs which they had figured. They figured, for instance, in the cost of the excavation, the Muscle Shoals Dam had nearly a mile of cofferdam, and they had to

excavate out of the middle of the river, and the costs of that excavation I think were something like $2 or $3 a yard. Their estimate that went up to Norris Dam where they were digging out of the banks was that they said they were doing the work for 50 cents a yard. I have forgotten the exact figures, but they said the cost of excavation at the Tennessee Valley Authority Muscle Shoals Dam was only about one-quarter or one-fifth of what it actually cost.

They did the same thing with regard to the concrete in the powerhouse. They said that the concrete, or the cost of it, was only about one-third or one-fourth of what it actually cost. In that way they got the rate base way down by putting costs on it which were absolutely unreal.

Mr. JONES. Do you find any other instance in which you will take issue with the allocation of costs to navigation and flood control and generation of electricity at the Tennessee Valley Authority projects?

Mr. WHITMAN. I do not know. I have not been connected with it. That was back about 17 years ago when I was in on that case, and I have not followed it closely since that time.

Mr. JONES. What case was that?

Mr. WHITMAN. That was the case where the stockholders brought suit.

Mr. JONES. What stockholders?

Mr. WHITMAN. I do not know whether it was the—I think it was the preferred stockholders.

Mr. JONES. Of the Alabama Power Co.?

Mr. WHITMAN. Yes. Of the Alabama Power Co. That's right.

Mr. JONES. What was the Alabama Power Co. paying the Government for that generation at the Wilson Dam?

Mr. WHITMAN. I do not recall what they were paying.

Mr. JONES. Do you know what they were selling that power for in Florence, just across the river?

Mr. WHITMAN. I probably did at that time, but that was 17 years ago. I remember just the points I have mentioned. As a matter of fact, I read an article in connection with it which I just reviewed shortly. I did not go into the costs.

Mr. JONES. Do you know what allocation of costs to the ratio of income it was that the Federal Government was obtaining from its investment in the generation of the hydroelectric power prior to its acquisition by the Tennessee Valley Authority?

Mr. WHITMAN. No.

Mr. JONES. Is it not a fact that it was less of a return to the Federal Government prior to its being acquired by the Tennessee Valley Authority than it was when the Tennessee Valley Authority took it over?

Mr. WHITMAN. I do not know.

Mr. JONES. I would appreciate it if you would look into that and supply it for the record, if you would like to, because it certainly bears on the allocation of costs. The ultimate test is the return to the Federal Government, and since it was being sold to a private utility for about 2.9 mills, as I recall it, and being sold 1 mile away for 9 cents a kilowatt, of course that brings in other considerations. That is high-priced transmission and servicing on the part of the private utility.

Mr. WHITMAN. As a matter of fact, the Alabama Public Service Commission was setting the rates and restricting them to a certain amount of return to the Alabama Power Co.

Mr. JONES. Yes. We know how they sometimes set rates.

Mr. WHITMAN. I happened to be chairman of the Public Service Commission of Maryland, setting rates for 7 years, so I know something about how they set rates.

Mr. JONES. I would have to take issue with the Alabama Public Service Commission since at that time they were setting a rate of 9 cents a killowatt-hour when they were buying it for transmission only a short distance of 1 or 2 miles. That would be rather unusual in your experience, would it not?

Mr. WHITMAN. It would be, but I do not know how that would affect the whole system. The Alabama Power Co. I know was not making 4½ times, or 20 times, or whatever it is, their costs.

Mr. JONES. About forty-some times.

Mr. WHITMAN. I know they were not making that much money on their property as a whole. It may be that you will have one spot that is much more profitable than other spots are. It is something like a street railway system.

Mr. JONES. Is that the single instance you had in mind in bringing out this point about allocation of costs to electricity when there is an element entering into the construction of these projects? Is the Tennessee Valley Authority Wilson Dam the only one that comes to your mind in making this statement?

Mr. SCHEIDENHELM. The Tennessee Valley Authority and the Wilson Dam were not in my mind at all, nor was any other project in mind. It is a matter of knowledge that there are various methods used, and they differ and give different results.

Mr. JONES. You mean between agencies?

Mr. SCHEIDENHELM. Between the agencies.

Mr. JONES. Yes, sir. Now I can understand what you had in mind.

Mr. SCHEIDENHELM. It had nothing to do with that aspect to which the chairman refers.

Mr. JONES. I see. In other words, there is need for uniformity in allocation of costs between the various agencies that construct hydroelectric generating units?

Mr. SCHEIDENHELM. Yes, not merely that, but it should be a logical one. The recommendation is specific, that it should not be predicated upon benefits, because that is nothing more than charging to each what it can afford and does not give any idea as to whether the given component, be it power, or flood control, or navigation, is worth while and is paying for itself.

Mr. JONES. In other words, it should have some criteria on which to judge each installation rather than measure the total cost and determine some arbitrary figure.

Mr. SCHEIDENHELM. It is more than that, sir. I think the agencies could not properly be accused of making an allocation by pulling a figure out of the air and saying this should be it in relation to the total. They have criteria, but the criteria do not meet with the approval of the engineers' joint council except in a relatively few instances.

One of the instances cited by Mr. Curran with respect to the Southwestern Power Administration in 3 out of some 12 dams appeared

to be close to it. But whenever benefits are involved you do not get anything more than charging what the traffic will bear, and that is not a logical and sensible thing to do.

Mr. JONES. What should be done?

Mr. SCHEIDENHELM. Our recommendation, as was read by Dr. Hoak, is first of all to make an allocation on the basis of the proportionate use of capacity, which has nothing to do with benefits, and to set that up so that everyone who is at all interested may see what that allocation is. Then, if there is to be departure from it, to set up that departure and the basis for it, but in departing from it prescribe certain criteria.

I think I had better read those criteria into the record because I do not have them at my tongue's end.

Dr. HOAK. While the colonel is finding these points we have only one final subject on which we think the committee has an interest, and that has to do with subsidization. We have this proposal in regard to that:

To the maximum feasible extent, the beneficiaries of Federal water resources developments should be required to compensate the Government, and hence the Nation's taxpayers, for the benefits accruing directly to them. Where, nevertheless, there is subsidization, there should be complete disclosure in all details, beginning with the initial reports recommending the development or project for authorization by Congress. Subsequently, all pertinent reports, including annual reports, should disclose the respects in which and the extent to which subsidies are involved.

Mr. SCHEIDENHELM. I can give you those criteria now. There are three of them.

First, the reduced allocation of cost against any component, the cost of which it is desired to reduce, shall not be less than the cost due solely to that component.

By component we mean such as power, flood control, or navigation.

Second, each of the remaining primary components, after such adjustment, shall still have an acceptable ratio of benefits to cost. Under the recommended criteria of the engineers' joint council that would be a ratio of at least 4 to 3.

Third, such reduced allocation of cost shall not result in allocating to any of the remaining primary components a cost—

(*a*) Greater than if such relatively weak component or components were eliminated or absent; or, in any case,

(*b*) Greater than the alternative expenditure for accomplishing the purposes of that remaining component.

That is essentially the same as saying that no component will have been eliminated if the difference in benefits between having that component and not having it is sufficiently greater than the allocated cost to make that ratio of benefits to cost acceptable.

Mr. JONES. Thank you very much, Colonel.

Doctor, I hope I am not being repetitious, but may I go back to the justification of projects rather than river basins? I wish you would elaborate on that a little bit and let me see if I follow you.

Dr. HOAK. I think that the question here involves a point analogous to the one that Colonel Scheidenhelm just mentioned, which has to do with the allocation of costs. The engineers' joint council favors the development of comprehensive plans, but project by project rather

than the authorization of an entire plan for a basin at one time. We do oppose in this connection the use of the so-called basin accounts method, because that involves the opportunity to require a profiitable portion of the development to carry an unprofitable portion. We think that every project should stand on its own economic feet.

Mr. JONES. You mean each individual part of a comprehensive program?

Dr. HOAK. Precisely.

Mr. JONES. So if the erection of a project would be a complement to some other project or some other works, then it should not be included in the comprehensive program?

Dr. HOAK. Unless the success of the comprehensive program needed that particular part.

Mr. JONES. How are you going to divorce those types of things? Under your suggestion how are you going to get away from that sort of thing? I do not see how you are going to be able to carry it on without including it in the whole. You cannot make an economic justification without bringing into play the relationship of one project to another.

Dr. HOAK. I think the colonel has a point there which he would like to make.

Mr. JONES. Fine, Colonel.

Mr. SCHEIDENHELM. If the assumption be that there must be immediate development of everything in the comprehensive scheme, then that would have to be the case. You would have to treat them as a whole. But that would mean developing some things which are premature, probably in the sense of need, but almost certainly in the sense of developing some bad apples along with the good apples. There is no need for that, as we see it, and no economic justification for that. Of course, if there were two projects which are physically—not economically, but physically—so dependent upon each other, then as literally stated in our proposition they should travel together. There might be such a thing, for instance, as a case of a power development where there is an irregularity of effluent or stream flow from it, so great that it would interfere with navigation downstream. That is taken care of generally by building another power development downstream, which operates on a different basis and releases a uniform flow.

There, there is a dependence. The Federal Government or anyone else could not operate the main project without interfering unduly with navigation, let us say, and therefore something else is needed. That is one of the cases where there is that interdependence. However, if the next development downstream were not needed for that purpose and would not earn its salt, by reason largely of the dam site not being so favorable or the flowage land being more costly, then as we see it there is no justification for constructing it.

The justification of that project should come out by itself into the limelight, where it can be seen. If from the standpoint of economic justification it ought not to be built, then that is an outcome which we think is a salutary one.

Mr. JONES. Then that project should be eliminated?

Mr. SCHEIDENHELM. At least for the time being. What the future may hold, with changing prices or needs, is another matter.

Mr. JONES. When you start to develop a stream the size of the Missouri you just cannot have priority in execution without carrying out the comprehensive work, can you?

Mr. SCHEIDENHELM. I think one can. Yes. I think one should.

Mr. JONES. That brings me to another point. I do not know whether you covered it in here. Do you have any suggestions as to the priority of projects, that is, the priority of the relationship of authorized projects to be undertaken? Have you any comment on that?

Mr. SCHEIDENHELM. Selection among authorized projects?

Mr. JONES. Yes.

Mr. SCHEIDENHELM. One definite statement contained in the Engineers Joint Council report is that the selection of the projects should not be on a geographic basis in order to scatter the projects all over congressional districts and States. The selection should be on a better basis than that. I believe we go no further than that in any recommendations as to what should be given priority. I doubt whether any criterion could be set up which would be satisfactory for choosing among the authorized projects, unless it were that——

Mr. JONES. Suppose you have a project that has an economic justification of 1.6 to 1 and you have another project which has an economic justification of 1.3 to 1. Which do you think should be undertaken first, the one with the greater economic justification or the one with the less economic justification?

Mr. SCHEIDENHELM. It was just that point which I was going to add when I started with "unless." The only exception would be that naturally the one that offers the greatest ratio of benefits to costs should normally be given the preference.

Mr. JONES. Do you have any suggestion as to how the Congress could proceed to see that those projects with a ratio of the greatest benefit as compared with total costs should be placed in construction first?

Mr. SCHEIDENHELM. I would suppose instructions to the agencies to bring those into the status of planning and requests for appropriations would be helpful toward that end.

Mr. JONES Have you examined some of the authorized projects that are now being undertaken and for which funds are being made available? Some of the authorized projects that have a greater ratio of benefits are not being undertaken.

Mr. SCHEIDENHELM. Have we examined them?

Mr. JONES. Yes.

Mr. SCHEIDENHELM. No.

Mr. JONES. In that connection do you think it would be wise to set up in the executive branch of the Government an agency that would superintend the evaluation of those projects and certify them to the Congress for appropriation?

Mr. WHITMAN. That has been recommended by us in the Board of Review. Everything should go through the Board of Review to Congress.

Mr. JONES. Should that be an Executive function?

Mr. SCHEIDENHELM. The Engineers Joint Council makes no recommendation as to whether it should be in the Executive or in Congress. When that matter was up, while the chairman was absent, I ventured in response to a question on that point to express a per-

sonal view, which is relatively new with me. I thought I did not take sides on it. I believe I do now.

I think it would be desirable that it be responsible to the Congress rather than to the Executive, and I reached that view because I think that there would be greater readiness to accept the recommendations of such a board if the board were responsible to the Congress than if it were responsible to the Executive.

Mr. JONES. Would that not depart from the ordinary scheme of government to have such an Executive function placed in the hands of the Legislative?

Mr. SCHEIDENHELM. I am not sure that that is strictly an Executive function, or at least not solely that. The Executive has much to do——

Mr. JONES. We already have that authority. The committees of the House, the Appropriations Committee and the Committee on Public Works, and the corresponding committees in the Senate have that authority vested in them at the present time.

Mr. SCHEIDENHELM. I do not doubt that they have the authority.

Mr. JONES. So, we are not making much progress when we just set up another legislative branch. We have the Library of Congress and the Legislative Reference Service to go into all of the factual information in that regard.

Mr. SCHEIDENHELM. But, if I may be pardoned for saying it, I believe it is a fact that the committees of Congress do not have a set-up sufficiently versed in these things on the technical side, as they are presently organized, to give them the full advice on it.

Mr. JONES. It would no longer be a board then. It would be an ordinary legislative operation of the legislative committees, with additional staff to appraise the relative values of the given authorized projects.

Mr. SCHEIDENHELM. I merely referred to committees because the chairman did, but in our view a single board of high quality——

Mr. JONES. Let us go back to that. You say "a board of impartial analysis and appraisal." If it is going to be a creation of the legislative branch of the Government, who is going to appoint that board?

Mr. SCHEIDENHELM. As a body, we have made no recommendation to that effect.

Mr. JONES. To go a little bit further, you made the suggestion, and evidently there is some thinking back of it that went into it. You made the suggestion to us, and for us to carry it out we would have to know what your thinking on it is.

Mr. SCHEIDENHELM. Let me make it clear again. The Engineers Joint Council made no such recommendation. I merely expressed a personal view.

Mr. JONES. Let me read it.

> There should be created a board for the impartial analysis and appraisal of Federal water projects and its review and report thereon should be prerequisite to the authorization or appropriation by Congress of or for projects of that kind.

That is the setting up of a board of impartial analysis and appraisal. That is the EJC recommendation.

Mr. SCHEIDENHELM. There is no question about that. I understood the chairman's question related as to how Congress would do it if Congress were to be the one.

Mr. JONES. If Congress were to be the one, tell me how we would proceed to make the appointment of that board.

Mr. SCHEIDENHELM. Then we would have to get into personal views again because the Engineers Joint Council makes no such recommendation. There are various ways in which it could be done. If there were no change in the set-up of the agencies and no change in the set-up of congressional committees, then I would suppose that the appropriate way of doing it would be by appointment through the committees acting jointly—through their chairman or otherwise.

Mr. WHITMAN. Could the Executive do it with the approval of Congress, either the Senate or the House, as a great many appointments are made?

Mr. JONES. Mr. Whitman, I would think offhand that the President has the inherent—it is a bad word to use nowadays—has the inherent right to appoint such a board if he thought it would expedite the handling of such cases. I am sure he could do that.

Mr. SCHEIDENHELM. In a way he has done that.

Mr. JONES. But he is now exercising that function through the Bureau of the Budget.

Mr. SCHEIDENHELM. Yes.

Mr. JONES. I imagine that under his authority he could select a group out of the Bureau of the Budget. He has an executive director down there at the present time, through whom they are attempting to operate. Nevertheless, we are getting projects and obtaining funds on projects that are not as good as some of the projects which do not receive funds. That is what brought me to this entire discussion.

Mr. WHITMAN. I think that is the reason why they are trying to get this whole question of water resources straightened out, because it has been so complicated where the projects which are not worthy have gone through and some which are worthy have not gone through.

Mr. JONES. This whole question of this impartial board has intrigued me no end because when you say "impartial" and when it comes back to treating it as a legislative function, then it becomes more complicated. I honestly do not see how that can very well be done.

Then we get over to the appointment by the President. I am quite sure the President, regardless of what party affiliations he might have, is always charged with being partial in making an appointment.

Mr. SCHEIDENHELM. We, Engineers Joint Council, have no specific recommendation on it.

Mr. JONES. In the final analysis this is still going to be a body politic. We cannot be divorced from it, and rightfully so, because it is the avenue through which the people exercise their democratic rights. We are the sentinels that are standing here, and we must at all times observe the rights of the people to be heard. I maintain you cannot put any agency or bureau beyond the reach of the people. Where the great question is going to arise is in getting this impartial board, because what would be impartial to you would be partial to me.

So, it goes, on and on.

Let me ask you this question: Would you go further and suggest that we have a department of Cabinet status for public works?

Mr. SCHEIDENHELM. The Engineers Joint Council takes no position on that. We would have to answer on a personal basis with a personal view.

Mr. JONES. What is your personal view, Colonel?

Mr. SCHEIDENHELM. My personal view is that at least the water-resources development should be put into one pigeon-hole or one authority. If that means a Department of Public Works, or of Natural Resources, let that be it. There are various ways of doing it.

I myself am not in accord with the recently publicized scheme which did not come before Congress, to put the Corps of Engineers within the Department of the Interior along with the Bureau of Reclamation, but I do think it is an appropriate thing to put the two together independently, and probably some other branches of public works along with them. As to just how far to go, I have not developed any personal view.

Mr. JONES. In other words, you take issue with Mr. Hoover and Mr. Leslie Miller, the chairman of that subcommittee of the Hoover Commission, with respect to that phase of the Hoover Commission's recommendations?

Mr. SCHEIDENHELM. Yes. Personally I do.

Mr. WHITMAN. He is a colonel.

Mr. JONES. Does that express your personal views, too, Mr. Whitman?

Mr. WHITMAN. I really have not decided in my own mind just exactly what to do. I say I have done quite a bit of work under the Corps of Engineers, and I have struck some very fair people in it, and I have struck some who were not so fair. I do not know whether there would be any improvement by putting it under a department rather than leaving the Corps of Engineers independent.

I say I have not made up my mind in connection with that.

Mr. JONES. Doctor, what is your opinion on that score?

Dr. HOAK. I am pretty much in the position of Mr. Whitman. It does seem that there would be a general advantage to the country if all agencies having to do with water-resource development were combined in a single department. That epitomizes in a few words my own impression that the general benefit would be augmented if all agencies having to do with water-resource development operated under a single department or agency.

In other words, we have at the present time something of the order of seven major agencies, I think, of the Government, concerning themselves with some phase or another of water-resource development. We have innumerable smaller bureaus and agencies that have some concern with problems involving water projects.

Mr. JONES. There are 35 agencies and bureaus in all, if that would be of any help to you.

Dr. HOAK. It just seems to me good business sense to combine in one organization all agencies having to do with a specific idea.

Mr. JONES. In other words, it is your notion, or your idea, that the functions of any agency should be transferred as well as the heads of the agencies that go along with it?

Dr. HOAK. Yes. It would then be tantamount to a business type of organization, wherein the aims of the divisions of interests could be reconciled more satisfactorily than appears to be the case now.

Mr. SCHEIDENHELM. Mr. Chairman, I take it that without saying so specifically when we have referred to the Corps of Engineers we have meant, as I meant, the civil functions of the Corps of Engineers.

Mr. JONES. I understood that.

There was one more item I would like to have you comment on. As you know, under present fiscal policy there has been great delay in obtaining funds for carrying out the works that have been authorized, and the period involved has been one in which there has been a change in economic factors. We have worked on the premise that the ratio of benefits has increased with relation to the ratio of costs. Can you find any fault with that generalization?

Dr. HOAK. Do I understand you correctly that you use the same cost-index factor to multiply both the benefits and the costs?

Mr. JONES. Yes.

Dr. HOAK. That leaves you with the same ratio; does it not?

Mr. JONES. It leaves you with the same ratio.

Dr. HOAK. We do not think that is proper. While you were absent from the room we discussed that particular point.

Mr. JONES. What I would like to have you comment on in that connection, because I saw your statement there, is how are we going to make a reevaluation of the ratio of costs to the ratio of benefits, and what factors should be taken into consideration if there is to be reevaluation? How is that to be accomplished?

Dr. HOAK. I think Colonel Scheidenhelm can respond to that better than I.

Mr. SCHEIDENHELM. I understood the word you used to be "re-evaluation"?

Mr. JONES. Yes.

Mr. SCHEIDENHELM. I suppose the answer is that there should be taken into account all of the things that were taken into account initially in making the original evaluation, together with any new factors that have come upon the scene, including increases of costs of doing this or that and increased worth-whileness of the benefits. It does not follow that, as has been entirely too frequently assumed by the agencies, the step-up due to price level results in the same ratio of benefits to costs. That just is not true, unless in exceptional cases.

If it happens to come out that way, it is the exception.

Mr. JONES. That generalization you would say would be in error because it does not take into account the economic changes that occurred from the time of the authorization to some future date? I have reference now to the fact that with regard to the Corps of Engineers' projects, something like 10½ years elapses from the time they are authorized until work starts on them.

Mr. SCHEIDENHELM. That is entirely too long. Of course, we positively recommend that that should be overcome by reappraisal or reevaluation, as the chairman referred to it.

However, if we take a situation like the present, for instance, we are practically at the peak of price levels as they have been known in this country. There are various theories and beliefs as to what is going to happen from here on, but let us assume that the result from here on will be a decrease in price level. That carries with it an assumption that there will be no war, of course. However, let us make that assumption and let us assume further that a project is to be built now, contracted for now. Then this high price level would be fixed as regards the cost side of it. It would be built at present price levels. But the benefits flow over the future. They flow over a long

period. If they are properly computed, they represent a reasonable average for the future.

We have made the assumption that the price level is going to drop, so that, therefore, the average of the benefits would drop from that standpoint alone.

Mr. JONES. If you consider in the final analysis these hard times, we would not build any.

Mr. SCHEIDENHELM. I think that is a reason for holding down on the building of projects. Yes.

Mr. JONES. We are certainly holding down on them, too.

Mr. SCHEIDENHELM. That same conclusion would flow from another reason; namely, that the high price level is due to a great economic activity in the country. Industries of all kinds are working at top level, or near top level. Therefore, those who earn are using more of the good things of life, including the necessities. If you add more water projects, you make it worse.

Mr. JONES. Let me ask you this question, which is rather fundamental and basic. Do you think private industry should not make plant expansion in times of increased cost of materials?

Mr. SCHEIDENHELM. I would not put it so strongly as that. No, sir.

Mr. JONES. Why would you not?

Mr. SCHEIDENHELM. Because there may be absolute needs that cannot be fulfilled at some other time. For instance in the present situation, when it has been established as a national policy that the Nation must rearm, there are needs to be met and industries must meet them. But an individual industry which is not dependent for its market on anything of that sort will look in the face as to what are the prospects for the future. Some of them, as now, are deferring their plans for expansion until they can get a better idea of the future.

Mr. JONES. We have had an unprecedented plant expansion brought about within the last 3 years or so, have we not?

Mr. SCHEIDENHELM. We have. We have been in the process of expanding for a much greater period than that.

Mr. JONES. That was to keep up with the economic growth of the country because of demands being placed on them, not only for war goods but for civilian goods as well.

Mr. SCHEIDENHELM. During World War II and the 2 years of practical preparation for it there was, of course, the defense and the war demand, and that put aside temporarily, without however causing any unemployment—put aside temporarily the production of other things. Then that latter need had to be met afterward, but that has been pretty much met now, as I believe the statistics demonstrate.

Mr. JONES. The fact remains that we are not keeping up with the development of our natural resources in water in the same proportion that our economic growth and development has taken place. We are falling way behind in that respect, are we not?

Mr. SCHEIDENHELM. Assuming that that is true, sir, my personal view is that that is not an unmixed evil. In my personal view that is nearer a blessing than an evil, because it leaves construction for times when there is more need for the industrial activity or the work, or the employment that results from that. To me it would seem to be an improper criterion.

Mr. JONES. In other words, you think we should wait until such times as our unemployment problems become acute, and then we should rush in and develop these projects we have neglected to construct in the past?

Mr. SCHEIDENHELM. I do not know that you have to rush in. With suitable planning it can be done without so much rushing as was evident in the middle thirties.

Mr. JONES. In the last depression.

Mr. WHITMAN. The PWA.

Mr. SCHEIDENHELM. Because there the demand, not merely from the Executive but from the Congress, was for things planned sufficiently to go ahead. It does not have to be in that form.

Mr. JONES. Should we not proceed to make these proper developments in water resources withiut waiting for those extraordinary times to be upon us? Take the tremendous floods that occurred recently on the Missouri River. Do you not think that is a rather compelling reason for us to make all haste in developing that river so that we will not have the continuous recurrence of floods and annual losses of our agricultural production, as well as losses of life and property?

Do you think the Federal Government owes some obligation which it should discharge in the way of these civil works?

Mr. SCHEIDENHELM. There are a number of questions there and my answers have got to be personal ones because the Engineers Joint Council did not cover that except to the point of giving its blessing, for whatever that is worth, to holding off from intensive development during periods of high national activity.

Mr. JONES. Does that not depend more or less on the dollars and cents involved rather than the human values to be accrued? That is, the value of society itself. Is that not a rather impelling reason why we should go along with this project rather than place the emphasis on what is to be accrued to our pocketbooks?

Mr. SCHEIDENHELM. If one were to say that the aspect of human life and value is controlling, then that carries with it the assumption that by building this or that the loss of life and value can be averted; but that just is not the case. It has been my observation—and I lived quite a few years and thought over these things—that when something happens as for instance in Kansas on the Kaw River last year, and on the Missouri now, there is a great to-do about getting things done to avert the repetition of that on that particular stream. However, in all probability—probability, I say—the next thing of equal importance that will happen will be on some entirely different stream. You cannot meet them all by doing that, and a few years of delay is not going to be as important, everything taken into consideration, as is the beneficial effect on the national economy by going on a more sane course of holding back in times of great prosperity and doing more during times of less prosperity.

Mr. JONES. Do you think we are proceeding with undue haste at the present time?

Mr. SCHEIDENHELM. In some respects, yes.

Mr. JONES. Where?

Mr. SCHEIDENHELM. Oh, I think on the Columbia River for one.

Mr. WHITMAN. The Arizona project.

Mr. JONES. You do not think we are proceeding wisely with our works on the Columbia River?

Mr. SCHEIDENHELM. Personally that is my view, yes, but please do not blame the Engineers Joint Council for that view.

Mr. JONES. No, sir.

Is there any thing further from you, Doctor?

Dr. HOAK. I have nothing further to contribute.

Mr. WHITMAN. Mr. Chairman, is the central Arizona project going ahead, do you know?

Mr. SCHEIDENHELM. That is not authorized.

Mr. WHITMAN. I did not know.

Mr. JONES. I am sure I speak for other members of the committee who had to leave early when I say that we want to thank you and we are sorry we have detained you this long. It has been a most interesting discussion. We thank you, Dr. Hoak, and Mr. Whitman, and of course Colonel Scheidenhelm, who has been of inestimable value to the committee. We have had opportunities on several occasions to discuss these problems in particular. We want to thank you from the bottom of our hearts.

Dr. HOAK. We appreciate being here.

Mr. WHITMAN. We appreciate your courtesy, Mr. Chairman.

Mr. JONES. We will adjourn until 2 o'clock.

(Whereupon, at 12:45 p. m. the subcommittee adjourned until 2 p. m. of the same day.)

STUDY OF CIVIL WORKS

WEDNESDAY MAY 14, 1952

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE TO STUDY CIVIL WORKS,
Washington, D. C.

The subcommittee met, pursuant to adjournment, at 2 p. m., in room 1302, New House Office Building, Hon. Robert E. Jones, Jr., presiding.

Charles D. Curran, staff director.

Mr. JONES. Mr. Rising, the subcommittee received and recorded your presentation on May 2, the date our staff director, Mr. Curran, scheduled your appearance before this subcommittee. As you know, circumstances beyond our control had forced a change in schedule and it was not possible for us to receive oral testimony from you and your colleagues at that time. We will place the statement you presented on May 2 except the two enclosures in the transcript of hearings at this point. The other material will be placed in the files of the subcommittee.

(The statement referred to is as follows:)

STATEMENT OF E. W. RISING

Mr. Chairman, my name is E. W. Rising. I am vice president of the National Water Conservation Conference, with office at 1215 Sixteenth Street NW., Washington, D. C. I am appearing today as spokesman for a group of representatives of nonprofit, non-Federal organizations that have been interested in the development and utilization of our land and water resources for many years.

Also present and ready to assist me in answering questions that may be asked after I have completed my statement are Mr. Lachlan Macleay, president of Mississippi Valley Association; Mr. William H. Webb, executive vice president, National Rivers and Harbors Congress; Mr. William E. Welsh, manager, National Reclamation Association; Mr. Don McBride, manager, Oklahoma Water Development Association; Mr. Fred J. Fredrickson, representing the North Dakota State Water Conservation Commission; and Mr. George R. Heidrich, vice president and area director, National Association Soil Conservation Districts.

We are here, Mr. Chairman and members of the committee, upon your invitation. We greatly appreciate the courtesy extended to us. We do not wish to qualify as technical experts; however, all of us have been engaged for many years in natural-resource development, and we hope that our comments may be of interest and aid the committee in its work.

We believe that our natural resources should be developed and utilized for the benefit of the Nation with special consideration of local, basin, and State interests.

We believe that we should proceed with resource development under a sound program with a minimum appropriation of $1 billion annually for construction of flood-control, soil-conservation, reclamation, and navigation projects. We favor larger appropriations of $1½ to $2 billion in normal years, for development of our water and land resources. We believe it unwise and impracticable to continue the "no new starts" policy.

Hundreds of millions of dollars of property and many lives are lost annually through disastrous floods. Our food requirements, also, make it necessary that we proceed with an accelerated program of soil conservation, flood control, reclamation, and drainage of our agricultural lands.

Experts tell us that in the period between 1940 and 1950 the cultivated acreage of the world decreased about 3 percent while in the same period world population increased by 200,000,000 persons.

Our census figures indicate that the population of the continental United States increased over 40 percent in the period 1920 to 1940 while in the same period our land available for crops dropped from 503,073,000 acres to 450,694,000 acres.

The facts are that we have been able to maintain our food supply largely because of conversion of land. As examples, about 65,000,000 acres of land formerly producing hay and grain for over 30,000,000 horses and mules has been released to produce food for people. Our present horse and mule population has been reduced to about 7 million or a net reduction of 23 million.

Reduction of cotton acreage in the South and transfer of perhaps as many as 35,000,000 acres of pasture and haylands in the Great Plains to growing of wheat has also aided materially in maintaining the supply of food for our increasing population. Science has also played an important role during the last few years in providing better fertilizers and farm practices.

Notwithstanding all of the conditions mentioned as favorable to production of increased quantities of food for human consumption, we find that our agricultural imports exceed our exports. With all parts of the world short of food and channels of trade often interrupted, the United States should not continue to rely entirely on science and imports to provide our increasing food requirements when there are opportunities to protect and rehabilitate our existing agricultural land by soil-conservation and flood-control measures and to develop new lands by construction of reclamation and drainage projects.

The Corps of Engineers have been engaged in improving our harbors and rivers for navigation and flood control for more than 150 years. The Bureau of Reclamation has likewise been engaged in the development of our water resource for irrigation of land since 1902. Serious efforts toward soil conservation on part of the Federal Government began in 1933.

Government agencies have basic plans for development of the land and water resources of all of our major river basins. Of course, these plans are subject to improvement and development year by year in accordance with the increasing and changing needs of the people.

Flood control should begin at the top of the hill where the first trickle of water starts. This should be an underlying principle.

A top-of-the-hill program involves the following:

(1) Conversion of land to use best adapted from standpoint of long-time flood protection and profit.

(2) Improvement in cropping system through crop rotation.

(3) Improvement by additional pasture and forest cover.

(4) Detention structures.

These detention structures catch water and release it gradually so that the smaller streams do not overflow. Such structures, together with other soil conservation measures, cannot control big floods. We must have in addition a large number of flood-control and multiple-purpose reservoirs; under programs of the Corps of Engineers and the Bureau of Reclamation.

The current construction program of the Corps of Engineers includes projects that are estimated to cost in round figures $5 billion. This program is approximately 68 percent complete. Of course continuing appropriations should be made from year to year to carry this program to completion. In addition another group of flood-control projects that will cost upward of $3 billion are, in our judgment, greatly needed. Also certain additional rivers and harbors projects costing around $600,000,000 should be given early consideration.

The current construction program of the Bureau of Reclamation includes projects that will cost when completed $2,700,000,000. This program is approximately 80 percent complete. In addition another group of reclamation and multiple-purpose projects costing about $500,000,000 are, in our judgment, needed at this time.

We are submitting for the information of the committee lists of the Corps of Engineers and Bureau of Reclamation projects which we suggest should be placed under early construction and for which appropriations should be made in addition to appropriations necessary for completing the projects now under construction.

Of course there will be additional new projects that will be found to be needed from year to year.

As already indicated we believe it to be absolutely necessary that our soil conservation program be continued and on a broader basis. A supplemental statement in support of the soil conservation program is submitted herewith.

While no attempt has been made to reach a definite agreement we suggest for consideration the division of the recommended billion dollar minimum construction program along lines as follows:

Projects	*Annual appropriations (in millions of dollars)*
Corps of Engineers	550–600
Bureau of Reclamation	300–325
Soil Conservation Service	100

We believe the amounts mentioned would permit continuation of construction and completion of projects now under construction by the agencies mentioned herein and also the beginning of a few additional projects that are urgently needed. This as already indicated should be a minimum program and should be expanded when, in the judgment of the Congress, economic conditions permit such action.

We are convinced that the projects that we suggest be added to the list now under construction, will create new values, will eliminate destruction and waste, and will not interfere with the defense effort. Money spent to construct the projects listed will be an investment that will pay good dividends. In fact we are convinced that these projects will be structures for preparedness.

We may need to help our allies maintain a strong and growing economy, but while we are doing it, can we afford not to develop and expand our own economy at the same time? We are now spending more United States dollars in foreign countries on water and soil development programs than we are spending on like projects in the United States.

The Republic of Mexico is reported to be spending approximately 12 percent of her total annual appropriations for projects to develop her water and soil resources while we, in the United States, are spending less than three-tenths of 1 percent for similar purposes.

I have recently seen two documents which I would like to bring to the attention of this committee. One of these documents is entitled "Congress Spends Billions for French Seaways." When I turned the pages I found that we were spending $2,000,000,000 through Marshall and ECA plans for power and navigation projects in France, Italy, and Switzerland. The other publication which attracted my attention is one by the Department of Agriculture, with title "The Fifth Plate." When I turned the pages, I was informed that for every four people who sat down to a meal in 1950 there will be at least one additional person at tables in the United States in 1975. It is agriculture's job to fill the fifth plate. It can be done, but it will require a sound program of conservation, reclamation, and flood control beginning now.

Our civil works program in this country is rapidly coming to a halt because of freeze orders and "no new starts" policies. When our job of developing our soil and water resources is completed, then only would such policies be justified. If we are to produce munitions of war, feed our expanding population and provide armament for ourselves and our allies, then we must stop the annual devastation by floods and drought, increase the productivity of our agricultural plant, and produce more kilowatts of hydroelectric energy. We should not continue to drag our feet on these programs, even in the present emergency.

Flood control

State	Project name	Total cost	1953	1954	1955	1956	1957	1958
Arizona	Painted Rock Reservoir	$27,569,000	$75,000	$500,000	$5,000,000	$10,000,000	$9,000,000	$3,000,000
	Tucson	2,671,000	1,000,000	1,000,000	571,000			
Arkansas	Degray	23,200,000		200,000	300,000	1,000,000	4,457,000	6,000,000
	Greer's Ferry Reservoir	16,531,000	50,000	130,000	1,400,000	4,100,000	5,325,000	3,275,000
	Lone Rock Reservoir	25,235,000		250,000	300,000	3,200,000	8,400,000	6,075,000
	Water Valley Reservoir, Ark. and Mo	14,412,000	2,000,000	4,150,000	4,000,000	2,500,000	1,300,000	
California	Bear Creek	617,000						
	Carbon Canal Dam and channel	5,436,000		1,000,000	1,500,000	1,500,000	1,280,000	
	Devil, East Twin, and Warm Creek	11,954,000		100,000	2,000,000	3,000,000	3,000,000	3,800,000
	Los Angeles County Drainage area (going)	311,439,800						
	Lytle Creek	620,000						
	Riverside	2,516,000				100,000	1,000,000	1,416,000
	Russian River	14,219,000		192,000	180,000	6,000,000	6,762,000	560,000
	Salinas River	4,784,000		121,000	69,000	500,000	500,000	5,000,000
	San Joaquin River and tributaries	5,107,200		1,000,000	2,090,000	1,760,400		
	Success Reservoir	11,980,000		100,000	5,000,000	4,000,000	2,478,800	
	Terminus Reservoir	14,400,000		100,000	6,500,000	5,000,000	2,466,500	
Colorado	South Platte River levees	26,786,000	50,000	150,000	3,400,000	4,000,000	4,000,000	
District of Columbia	Anacostia River	7,336,000	50,000	1,725,000	2,400,000	1,600,000	1,500,000	
Illinois	Beardstown	3,240,900	800,000	1,600,000	840,000			
	Freeport	1,096,000						
	Russell and Allison levee	3,081,000		66,000	565,000	1,200,000	1,000,000	250,000
	Sny Basin	17,698,000	2,100,000	2,600,000	4,150,000	4,150,000	2,600,000	
Indiana	Indianapolis	8,229,000	800,000	1,200,000	2,000,000	1,524,000	832,500	
	Mansfield Reservoir	4,955,000		100,000	900,000	2,700,000	1,229,000	
	Peru	6,350,000		80,000	750,000	1,800,000	2,600,000	1,118,000
	Greenfield Bayou	1,035,000		30,000	460,000	545,000		
Iowa	Des Moines	651,000	48,500	601,000				
	Little Sioux	4,510,000	4,000,000	1,500,000	1,850,000			
	Red Rock	67,140,000		4,500,000	20,000,000	24,000,000	12,500,000	4,980,000
	Sioux City	1,100,000		50,000	500,000	550,000		
Kansas	Elk City	22,240,000		200,000	2,000,000	5,000,000	6,000,000	6,200,000
	Pioneer	17,358,000		100,000	1,000,000	4,000,000	4,500,000	4,000,000
	Strawn Reservoir	19,810,000	100,000	3,000,000	5,500,000	6,000,000	3,800,000	1,160,000
	Topeka	2,649,000	500,000	1,340,800				
	Toronto	15,550,000	5,000,000	5,000,000	5,168,000			
	Tuttle Creek	79,132,000	15,500,000	21,000,000	21,000,000	18,000,000	3,000,000	
Kentucky	Barbourville	2,040,000	125,000	350,000	1,200,000	340,000		
	Falmouth	22,450,000		75,000	6,000,000	9,000,000	7,111,000	
	Fishtrap	24,542,000		50,000	300,000	4,000,000	10,000,000	10,000,000
	Jessemine Creek Reservoir	38,450,000	50,000	3,500,000	9,000,000	10,000,000	10,000,000	5,700,000
	Pineville	1,540,000	125,000	250,000	900,000	240,000		
	Rough River Reservoir	7,200,000		70,000	700,000	2,200,000	2,700,000	1,500,000
Louisiana	Morringsport Reservoir	10,000,000		105,000	3,400,000	4,000,000	2,400,000	
	Ferrell's Bridge	25,000,000	200,000					
Massachusetts	Barre Falls Reservoir	2,182,000	1,300,000	665,000				

Massachusetts	Barre Falls Reservoir	2,182,000	1,000,000					
	Buffumville Reservoir	2,314,000		1,500,000	700,000			
	Westhill Reservoir	2,331,000			70,000	800,000	1,400,000	
Missouri	Big River Reservoir	17,821,000		54,000	450,000	5,000,000	5,000,000	7,000,000
	Canton	1,469,000		65,000	600,000	800,000		
	Cape Girardeau	5,397,000	1,000,000	1,400,000	1,400,000	1,497,000		
	Chariton, Mo., and Iowa	2,740,000		1,200,000	498,000			
	Clearwater Reservoir	10,200,000		60,000	60,000	816,000		
	East Poplar Bluff	290,000		250,100				
	Poplar Bluff to Knobel, Ark	3,734,000		650,000	1,400,000	1,540,000		
	Joanna Reservoir	30,496,000		200,000	4,400,000	9,000,000	9,000,000	7,700,000
	Table Rock Reservoir	76,340,000	600,000	1,500,000	16,500,000	27,000,000	21,400,000	7,000,000
	Pomme de Terre Reservoir	21,922,000		2,500,000	5,500,000	7,500,000	5,752,500	
Montana	Havre	2,075,000	312,000	900,000	760,000			
	Libby	263,564,000	200,000	3,405,000	46,563,000	71,077,000	69,180,100	42,516,000
Nebraska	Gavins Point Reservoir (started)	60,055,000						
Nevada	Humboldt River	9,152,000	150,000	2,000,000	3,500,000	3,502,000		
New Hampshire	Bennington Reservoir	10,908,000		100,000	3,500,000	3,000,000	4,000,000	
New Mexico	Blue Water floodway	231,000	19,800	211,000				
	Chamita	35,518,000	85,000	145,000	1,650,000	5,800,000	12,650,000	15,000,000
	Rio Grande floodway	3,465,000	10,000	24,000	800,000	1,000,000	1,547,000	
New York	Batavia	714,000	20,000	674,000				
	Copes Corner Reservoir	12,450,000		69,000	105,000	2,500,000	4,500,000	5,100,000
	Corning	4,949,000	25,000	1,606,000	1,108,000			
	Davenport Center Reservoir	10,100,000		1,500,000	2,000,000	4,000,000	2,300,000	
	Genegantslet Reservoir	6,750,000		120,000	1,100,000	3,000,000	1,500,000	818,000
	South Plymouth Reservoir	6,990,000		67,500	1,500,000	3,000,000	2,300,000	
	Watkins Glen	1,024,000		985,600				
	Wellsville	792,000	25,000	747,000				
	West Oneonto	10,530,000		21,000	100,000	1,600,000	4,000,000	4,600,000
North Carolina	Reddies River Reservoir	3,116,000	103,500	1,500,000	1,381,000			
Ohio	East Fork Reno Beach-Howard Farms	402,000			397,500			
Oklahoma	Eufaula Reservoir	139,200,000		400,000	500,000	4,000,000	12,000,000	25,000,000
	Keystone Reservoir	126,750,000	150,000	3,500,000	7,500,000	18,000,000	24,000,000	30,000,000
	Oklahoma City floodway	10,460,000	3,000,000	3,400,000	2,500,000	976,000		
	Ologah Reservoir	33,040,000	1,500,000	6,000,000	8,250,000	9,500,000	7,000,000	319,000
Oregon	Cougar	38,818,000		200,000	2,500,000	10,000,000	14,000,000	10,000,000
	Green Peter	35,661,000		200,000	2,500,000	8,000,000	10,000,000	12,000,000
	Hills Creek	27,187,000	125,000	4,250,000	9,384,000	9,060,000	3,493,000	825,000
	Lower Columbia (improvements to existing works).	18,129,000	200,000	3,353,000	2,400,000	5,500,000	4,200,000	2,600,000
Pennsylvania	Allegheny River Reservoir (N. Y.)	79,964,000		55,000	2,700,000	8,900,000	15,700,000	17,800,000
	Bear Creek Reservoir	16,500,000		1,840,000	4,516,000	2,750,000	3,700,000	3,200,000
	Bradford	8,635,000		100,000	750,000	2,500,000	3,500,000	1,785,000
	Prompton Reservoir	4,865,000		1,725,000	1,700,000	1,300,000		
	St. Marys	434,500			82,800	170,000	181,700	
	Shenango River Reservoir (Ohio)	16,760,000		2,500,000	6,000,000	6,500,000	1,500,000	
	Stillwater Reservoir	7,850,000		150,000	3,000,000	3,000,000	1,620,000	
	Swoyerville and Forty-Fort	3,416,000	30,000	2,617,000	640,000			
	Tyrone	7,168,000		750,000	2,000,000	2,250,000	2,252,000	
	Uniontown	1,724,300		30,000	290,000	690,000	264,300	
Rhode Island	Woonsocket	1,649,000		130,000	1,150,000	369,000		
South Carolina	Hartwell Reservoir (Ga.)	80,500,000	4,000,000	17,350,000	28,000,000	22,000,000	8,807,000	

Flood control—Continued

State	Project name	Total cost	1953	1954	1955	1956	1957	1958
South Dakota	Big Bend	$49,500,000		$150,000	$500,000	$5,000,000	$16,000,000	$16,000,000
Tennessee	Chattanooga and Rossville, Ga	24,260,000		3,766,000	8,000,000	8,000,000	4,300,000	
	Stewart's Ferry Reservoir	20,660,000		2,500,000	9,000,000	6,500,000	2,130,000	
	Three Islands Reservoir	17,530,000		150,000	1,000,000	4,042,000	7,300,000	4,926,000
Texas	Canyon Reservoir	29,000,000		1,000,000	3,663,000	5,577,000	5,000,000	1,000,000
	Dallas floodway	7,936,500	$900,000	2,500,000	3,500,000	1,050,000		
	Ferrell's Branch Reservoir	17,120,000	1,000,000	5,900,000	7,750,000	2,017,000		
Vermont	Ball Mountain Reservoir	13,400,000	5,000,000	3,500,000	4,361,000			
	East Barre Reservoir	3,358,000	1,650,000	1,625,000				
	North Hartland Reservoir	8,521,000	85,000	350,000	4,000,000	2,000,000	2,057,000	
	Rutland	4,020,000	500,000	1,700,000	1,737,000			
	Townshend Reservoir	8,939,000		100,000	800,000	1,500,000	3,000,000	3,468,000
	Victory	4,022,000	75,000	1,771,000	1,870,000	150,000		
Virginia	Gathright and Falling Springs Reservoir	22,400,000	100,000	3,500,000	7,000,000	10,000,000	1,675,000	
	Moore's Ferry Reservoir	43,215,000		150,000	200,000	8,000,000	12,000,000	12,000,000
	Salem Church Reservoir	39,400,000		150,000	3,000,000	10,400,000	16,000,000	9,718,000
Washington	Colfax	2,162,000		120,000	475,000	750,000	575,000	168,000
	Eagle Gorge Reservoir	17,400,000	200,000	1,000,000	5,000,000	8,000,000	3,200,000	
	Lewiston-Clarkston (Idaho)	3,466,000		100,000	135,000	1,000,000	2,231,000	
	Priest Rapids Reservoir	330,370,000		800,000	9,200,000	23,820,000	32,699,000	35,526,000
West Virginia	Burnsville Reservoir	5,705,000		75,000	104,000	1,500,000	2,000,000	2,026,000
	New Martinsville	4,079,000		50,000	125,000	2,000,000	1,900,000	
	Summersville Reservoir	20,950,000		150,000	4,000,000	10,000,000	10,000,000	5,614,000
	Sutton	28,590,500	3,000,000	3,265,000	4,735,000	10,000,000	8,634,500	
	Wheeling-Benwood	15,580,000	150,000	3,793,000	2,454,000	5,245,000	3,750,000	
Wyoming	Jackson Hole	1,772,000		50,000	250,000	335,000	510,000	629,000
	Sheridan	2,097,000		14,000	114,000	300,000	1,000,000	660,000
Total		2,977,300,300	57,788,800	172,492,000	390,181,310	534,490,400	514,450,900	348,958,000

RECAPITULATION

1953	$57,788,800
1954	172,492,000
1955	390,181,310
1956	534,490,400
1957	514,450,900
1958	348,958,000
	2,018,361,412

Total cost, $2,977,300,300.

Rivers and Harbors projects

State	Project name	Total cost	1953	1954	1955	1956	1957	1958
Arkansas and Oklahoma	Arkansas River and tributaries: Dardanelle lock and dam.	$80,838,000	$100,000					
	Arkansas River and tributaries: Short Mountain lock and dam.	101,300,000	50,000					
Arkansas and Louisiana	Ouachita River	16,900,000	500,000					
	Overton-Red River waterway	75,000,000	3,000,000					
California	Half Moon Bay	5,600,000						
	Noyo River and Harbor	2,130,500	500,000					
	Redondo Beach Harbor	3,587,000	50,000					
Delaware	Delaware River project	34,000,000			$7,646,000	$16,000,000	$21,847,000	$15,300,000
Florida	Cross Florida Barge Canal	92,815,200			1,956,000	1,472,600		
	Intracoastal Waterway (Caloosahatchee River to Anclote River).	5,346,000		$1,750,000				
Illinois	Calumet Harbor and River	11,146,000		1,461,600	1,988,300	533,000		
	Calumet Sag Channel	105,462,200		200,000	300,000	5,000,000	20,000,000	20,000,000
	Keokuk lock No. 19	18,042,000	2,500,000	6,692,000	5,311,000	2,626,000	265,900	
Kentucky	Ohio River:							
	New Cumberland locks and dams	43,000,000	900,000	1,200,000	11,500,000	12,500,000	10,000,000	6,721,000
	Greenup locks and dam	52,730,000	75,000	100,000	7,495,000	14,935,000	13,080,000	12,674,000
	Fernbank locks and dam	69,500,000	100,000	250,000	5,000,000	21,000,000	21,825,000	14,550,000
	Lock and dam No. 41	51,987,500			113,500	6,000,000	13,000,000	11,000,000
	Carthage Dam, Tenn	39,800,000	1,090,000	5,000,000	19,400,000	12,600,000	1,510,000	
	Celina Dam, Tenn	34,050,000	50,000	4,000,000	7,725,000	12,010,000	9,515,000	700,000
Massachusetts	Boston Harbor: 30- to 40-foot anchorages, extension.	2,600,000		2,600,000				
	Fall River Harbor, 35-foot channel	2,400,000	200,000	2,200,000				
	Mystic River, 35-foot channel	3,915,600	2,310,000	1,605,600				
Michigan	Detroit River:							
	Amherstberg Channel	20,823,000		10,000	4,000,000	8,000,000	8,811,000	
	Port Austin Harbor	1,013,500		1,010,000	3,500			
	New Bridge, St. Marys River	2,922,000		2,875,900	46,100			
Michigan	New Poe lock, etc	30,074,000		200,000	2,300,000	7,000,000	12,565,000	8,009,000
New Jersey	Intracoastal Waterway	6,054,000			3,000,300	3,053,700		
New York	Great Lakes to Hudson River	30,035,000			1,500,000	2,500,000	2,000,000	1,252,000
	Oswego Harbor	9,686,000			120,000	3,566,000	3,000,000	3,000,000
North Carolina	Wilmington Harbor	2,057,000		168,000	1,889,000			
Ohio	Cleveland Harbor	18,882,000	6,000,000	7,287,600	499,500	190,000		
	Conneaut Harbor	4,824,000		14,000	1,540,000			
Oregon	Columbia River	3,303,600		1,180,000	1,708,000	275,000		
	Willamette	9,039,800		2,000,000	4,000,000	2,897,000		
Pennsylvania	Monongahela River Dam No. 8	2,734,400		2,196,600	462,400			

Rivers and Harbors projects—Continued

State	Project name	Total cost	1953	1954	1955	1956	1957	1958
West Virginia	Monongahela River Hildebrand lock and dam	$14, 865, 000	$35, 000	$70, 000	$2, 500, 000	$7, 725, 000	$4, 500, 000	
	Monongahela River Opekiska lock and dam.	16, 286, 000				156, 000	3, 500, 000	$5, 509, 000
Texas	Brazos Island Harbor	3, 330, 000		1, 250, 000	1, 250, 000	880, 000		
	Guadalupe Channel to Victoria	13, 400, 000		40, 000	655, 000	5, 500, 000	4, 000, 000	3, 500, 000
	McGee Bend Dam	42, 243, 600	25, 000	1, 030, 000	9, 436, 100	13, 859, 000	12, 611, 000	4, 441, 350
	Rockland Dam	43, 260, 800						
	Trinity River	7, 750, 000		1, 137, 100	1, 100, 000	1, 100, 000	774, 100	
Washington	Ice Harbor lock and dam	102, 132, 000	5, 000, 000	22, 000, 000	27, 000, 000	29, 000, 000	18, 238, 000	
	Lower Monumental lock and dam	92, 614, 000		100, 000	100, 000	6, 000, 000	22, 000, 000	22, 000, 000
	Little Goose lock and dam	104, 335, 000			50, 000	500, 000	10, 000, 000	21, 000, 000
	Lower Granite lock and dam	87, 305, 000				100, 000	500, 000	7, 000, 000
Wake Island	Wake Island Harbor	3, 040, 000			700, 000	2, 340, 000		
		614, 161, 700	22, 485, 000	69, 598, 400	132, 294, 700	190, 918, 300	213, 542, 000	136, 647, 300

Suggested list of reclamation projects which should be included in program for construction

Reclamation projects	Total cost	1953	1954	1955	1956	1957	1958
Solano, Calif	$38,745,000		$5,000,000	$13,000,000	$13,000,000	$5,000,000	$1,000,000
Vermejo, N. Mex	2,679,000	$1,034,000	1,000,000	645,000			
Weber Basin, Utah	72,313,000	3,500,000	14,000,000	13,750,000	5,200,000	7,300,000	6,000,000
Kennewick, Wash	13,206,568	2,600,000	6,500,000	2,300,000	1,000,000	806,568	
Yakima, Wash	2,323,878		800,000	1,400,000	123,878		
Minidoka-North Side Pumping, Idaho	11,901,233	600,000	2,000,000	3,000,000	3,000,000	3,301,233	
Units of Missouri River Basin project [1]							
Cannonball unit, North Dakota	12,000,000	50,000	170,000	1,660,000	3,345,000	3,360,000	2,000,000
Owl Creek, Wyo	3,388,399		950,000	1,350,000	325,000	463,399	300,000
Lower Marias, Mont	60,250,000	4,000,000	7,000,000	11,500,000	11,000,000	6,850,000	7,000,000
Missouri diversion unit, Missouri-Souris Division, Montana and North Dakota	102,212,885	2,600,000	8,400,000	7,300,000	8,000,000	7,600,000	8,000,000
Yellowtail, Mont	99,586,015		6,800,000	17,800,000	27,400,000	29,300,000	15,000,000
Glen Elder Reservoir, Kans	23,500,000	3,500,000	6,000,000	6,000,000	4,000,000	2,000,000	2,000,000
Webster Dam and Reservoir, Kans	11,500,000	1,000,000	6,155,000	3,175,000	1,170,000		
Wilson Dam and Reservoir, Kans	13,200,000	1,000,000	3,700,000	5,500,000	3,000,000		
Rapid Valley, S. Dak	9,074,827	2,000,000	3,000,000	2,000,000	2,074,827		
Sargent unit, Nebraska	11,163,000	1,163,000	4,000,000	3,000,000	3,000,000		
Total	487,043,805	23,047,000	75,475,000	93,380,000	85,638,705	65,981,200	41,300,000

[1] In the Missouri River Basin, 30 units have been placed in phase A, of which 9 have been completed. Missouri River Basin reservoirs now under construction include the Kirwin, Kans.; Canyon Ferry, Mont.; Jamestown, N. Dak., Boysen, Wyo.

There are about 100 reservoirs in the Bureau of Reclamation program for Missouri River Basin on which construction has not been started.

$102,221,900 would be required after 1958 to complete the Solano, Weber, Cannonball, Lower Marias, Montana Division of Missouri-Souris, and Yellowtail units.

Supplemental Statement Relating to Reclamation Projects

A reclamation project is required, under existing laws, to show financial feasibility as well as economic justification. This means that a project, in addition to meeting the criteria that all benefits must equal or exceed all reimbursable costs, must also show a full return to the Federal Treasury of all costs allocated to irrigation and other reimbursable functions.

It is generally recognized today that reclamation, along with other types of water resource development, must be carried forward as a part of a multiple-purpose, basin-wide development program. This is the only means by which the full development and utilization of a river basin's resources can be realized. Future reclamation projects necessarily will be much more costly than the simpler and smaller projects of a generation ago. In fact, they will be more costly than those of the past decade.

The costs of such development, properly allocable to irrigation, will be beyond the ability of the water users alone, to repay. In view of this situation, as it is developing, it is only reasonable that all of the revenues from such project, including the revenues from power, should be used to repay the reimbursable costs of the project.

The use of power revenues, along with other revenues to repay the reimbursable costs of reclamation projects, is not new. In fact, it is as old as reclamation itself. The act of April 16, 1906, stated: "Moneys derived from such leases"—lease of power developed on reclamation project—"shall be covered into the reclamation fund and be placed to the credit of the project from which such power is derived."

Such use of power revenues has become historic and traditional policy and has been universally accepted by the Congress and the entire Nation for half a century. This proven and accepted policy must be continued.

Originally, power revenues were made available to assist in the repayment of reimbursable costs when produced from power installations from units of the same individual project. However, with the broadening concept of reclamation projects, along with other types of water resources development from a single

unit, to a basin-wide multiple-purpose basis, the concept of the availability of power revenues for repayment of reimbursable costs has been correspondingly broadened. Today, reclamation projects are often authorized on a basin-wide basis. The use of revenues from all phases of a Federal water development program, including the power features within the basin, are authorized to the extent necessary to fulfill the repayment requirements of all reclamation costs within the basin.

A significant basin-wide program was the Missouri-River Basin project, usually referred to as the Pick-Sloan plan. Here, the entire Missouri River Basin program was authorized in the 1944 Flood Control Act as one project. This authorization of the Missouri River Basin project by the Congress permits the use of power revenues from Federal power features to assist in repaying the reimbursable costs of the entire project. This pooling of all revenues for repaying the reimbursable costs of the entire project is essentially what is meant by the term "basin-account". A similar pooling has also been authorized by the Congress in the Central Valley project in California.

There are other river basins in the West, including particularly the Columbia, the upper Colorado, and the Arkansas, which are in various stages of investigation and development, all of which will require the same basin-wide, multiple-purpose treatment in order to establish financial feasibility. The orderly and continued development of these great river basins of the West is of the utmost importance, not only to the West, but to the entire Nation.

The only way in which the West can continue to grow, develop and prosper is through the use that is made of its available water supply, particularly for irrigation and reclamation. In view of the regional and national importance of reclamation, it is imperative that the policy which not only has proven highly satisfactory but which has been universally accepted for half a century, should be continued, namely:

1. Reclamation projects wherever feasible should be authorized on a basin-wide, multiple-purpose basis.

2. Revenues from all Federal water resource development features within a basin, including but not limited to power revenues, should be utilized to the extent necessary to fulfill the repayment requirements of the reimbursable features of the project.

3. When, because of a national emergency or for other reasons the power features of a project in an area or river basin are authorized prior to other project features, then provision should be made whereby the power revenues, over and above those required to return the power investment to the Federal Treasury, may assist in repaying the costs of the later development of the irrigation and other reimbursable features of the project.

Supplemental Statement Relating to Watershed Programs

The tables following this statement show estimated appropriation needs for watershed works of improvement embracing the activities of the Department of Agriculture to be carried out under the Flood Control Act of 1936.

It is our sincere conviction that watershed programs need to be stepped up for purposes as follows:

(*a*) To provide flood protection for smaller valleys above the sites of downstream reservoirs,

(*b*) To stabilize watershed conditions and protect our agricultural resource base, and

(*c*) To protect downstream reservoirs and channels against excessive silting.

It is our conviction, moreover, that the upstream watershed programs are complementary to main channel programs of reservoirs for flood control, irrigation and related purposes, but are not in any way a substitute therefor.

Eleven watershed projects were authorized to be carried out by the Department of Agriculture in the Flood Control Act of 1944. We are informed that review survey reports have been completed on two of these (Trinity, Tex., and Washita, Okla.-Tex.), and will soon be submitted to the Congress. Review surveys are under way on three others (Colorado, Tex.; Coosa, Ga.; and Potomac, Md.-Va.-Pa.-W. Va.). Where data are available, our tabulation shows the estimated total Federal cost determined by review surveys.

In addition, we have listed a total of 27 additional watershed projects for which surveys have been completed by the Department of Agriculture. Reports on 10 of these surveys have been submitted to the Congress.

We feel that appropriations should be expanded as rapidly as possible to a minimum of $100 million annually for the watershed programs authorized, submitted for authorization, or to be submitted this year. The estimates presented in our tabulation have been based on conferences with officials of the National Association of Soil Conservation Districts, the Department of Agriculture, and others interested.

The programs presented in these watershed reports provide for the installation of flood prevention and watershed stabilization measures, such as small upstream retarding structures, debris basins, major gully control, channel improvements, etc. They provide also for stepping up the rate of application of land-treatment measures to keep pace with the progress of installation of flood prevention measures.

We do not think that these watershed programs should include plans or estimates for any agricultural programs other than those that are exclusively for technical assistance and construction of upstream flood water retardation structures and associated soil and water stabilizing measures.

These programs do not conflict with the "going" national programs of the Department of Agriculture for providing technical assistance to soil conservation districts or incentive payments to farmers for the installation of soil conservation measures on their own farms, nor for carrying out needed forest and range management programs. They do provide a basis for planning by subwatershed areas in cooperation with local organizations, the needed total watershed stabilization and flood prevention programs that are essential to give this country a balanced upstream and downstream development, conservation, and use of its water and related land resources. The estimated financial needs are, therefore, over and above the "going" programs of the Department of Agriculture except for the amount being currently appropriated under the flood control item for the 11 authorized watershed programs.

It is our understanding that the Department is now engaged in making surveys on nearly 50 additional watersheds which may be submitted to the Congress for authorization within fiscal year 1953 or later. We have not taken into account these additional projects for which no firm estimates of total Federal cost are yet available.

Estimate of appropriation needs for watershed works of improvement

Watershed	Area	Years to complete program (estimate in survey report)	Estimated total Federal cost
	Square miles		
Authorized for works of improvement:[1]			
Buffalo Creek, N. Y.	437	18	[2] $4,517,450
Colorado Middle, Tex.	7,200	20	[2] 4,712,750
Coosa Ga., Tenn.	965	20	[2] 2,157,750
Little Sioux, Iowa, Minn.	1,600	15	[2] 7,490,000
Little Tallahatchie, Miss.	1,355	20	[2] 6,856,700
Los Angeles, Calif.	545	10	[2] 16,399,250
Potomac, Md., Va., Pa., W. Va.	6,600	24	[2] 1,431,000
Santa Ynez, Calif.	900	10	[2] 1,831,500
Trinity (Review) San Jacinto, Tex.	23,002	15	[3] 113,461,000
Washita (Review), Okla., Tex.	8,108	15	[3] 59,121,000
Yazoo, Miss.	5,035	20	[2] 31,024,250
Subtotal			[2] 249,002,240

[1] These 11 authorized projects would be completed in an average period of 10 years if funds were provided beginning in fiscal year 1953 as shown in estimates below.
[2] Authorized costs shown in survey report adjusted to reflect 1949 prices.
[3] Cost estimate in review survey report expected to be submitted to the Congress in 1952.
[4] The Department is now engaged in making surveys on an additional 27 watersheds, with scheduled dates for completion in 1953 and 1954. If authorized, additional funds for beginning installation of works of improvement would be requested in fiscal years 1954 and 1955.

Program cost per year

	Estimated needs, fiscal year—					
	1953	1954	1955	1956	1957	1958
Cost of—						
11 authorized units	$15,000,000	$22,000,000	$32,500,000	$32,500,000	$32,500,000	$32,500,000
27 additional units	5,000,000	18,000,000	37,500,000	67,500,000	67,500,000	67,500,000
Grand total	20,000,000	40,000,000	70,000,000	100,000,000	100,000,000	100,000,000

Surveys completed—reports expected to be transmitted to Congress by July 1, 1952 [4]

Watershed	Area	Years to complete program (estimate in survey report)	Estimated total Federal cost
	Square miles		
Youghiogheny, Pa., Md., W. Va	1,762	20	$4,350,000
Delaware, N. Y., Pa., N. J., Del., Md	12,765	20	32,766,000
Green River, Ky., Tenn	9,273	20	56,305,000
Pee Dee, Va., N. C., S. C	6,870	20	13,638,000
Savannah, N. C., S. C., Ga	10,579	15	14,906,000
Sny, Ill	547	20	6,542,777
Scioto, Ohio	6,510	20	11,615,210
East Fork White and Patoka, Ind	6,630	20	12,123,736
Roanoke, Va., N. C	9,580	20	11,023,000
Brazos, Tex	41,997	15	69,084,000
Lower Arkansas, Okla., Ark	17,549	15	69,060,000
Grand (Neosho), Ark., Kans., Mo., Okla	12,660	20	44,893,000
Queen Creek, Ariz	880	10	1,107,400
Pecos, N. Mex., Tex	33,200	15	14,683,800
Walla Walla, Wash., Oreg	1,800	20	11,640,200
Russian, Calif	1,508	20	6,230,500
Salinas, Calif	4,875	20	5,977,900
Salt-Wahoo, Nebr	1,655	10	17,522,730
Blue, Kans., Nebr	9,600	20	56,890,440
Osage, Mo., Kans	15,300	20	117,904,700
Upper South Platte, Colo., Wyo	9,160	20	48,853,800
Upper White, Ark., Mo	9,872	15	47,777,000
Wasatch Front, Utah	2,254	10	5,371,000
Fountain, Colo	927	10	3,062,000
Sevier, Utah	17,600	10	13,336,000
Santa Maria, Calif	1,873	20	3,596,000
Connecticut, Vt., Mass., Conn., N. H	11,260	20	17,563,000
Subtotal			717,823,193
Grand total			966,825,643

STATEMENTS OF E. W. RISING, VICE PRESIDENT, NATIONAL WATER CONSERVATION CONFERENCE; LACHLAN MACLEAY, PRESIDENT, MISSISSIPPI VALLEY ASSOCIATION; WILLIAM H. WEBB, EXECUTIVE VICE PRESIDENT, NATIONAL RIVERS AND HARBORS CONGRESS; WILLIAM E. WELSH, MANAGER, NATIONAL RECLAMATION ASSOCIATION; DON McBRIDE, MANAGER, OKLAHOMA WATER DEVELOPMENT ASSOCIATION; FRED J. FREDERICKSON, NORTH DAKOTA STATE WATER CONSERVATION COMMISSION; AND GEORGE R. HEIDRICH, THE NATIONAL ASSOCIATION OF SOIL CONSERVATION DISTRICTS

Mr. JONES. You have with you today, I believe, Mr. Macleay of the Mississippi Valley Association, Mr. Webb of the National Rivers and Harbors Congress, Mr. Welsh of the National Reclamation Association, Mr. McBride of the Oklahoma Water Development Association, Mr. Frederickson—

Mr. RISING. Mr. Frederickson has not come in yet, but is expected; and Mr. Heidrich, of the National Association of Soil Conservation Districts, is present.

Mr. JONES. As I understand it, you want to say a few words and then you will proceed with Mr. Heidrich in order that he can keep an appointment with the Secretary of Agriculture.

Mr. RISING. That is correct.

Mr. JONES. You may proceed.

Mr. RISING. My name is E. W. Rising. Before proceeding may I request that members who have been previously supplied with a copy of our statement add at the end of paragraph 2, page 1, the name of Mr. George R. Heidrich, vice president and area director, National Association of Soil Conservation Districts.

Due to the fact that Mr. Heidrich has another appointment and must soon leave, I am going to ask that consideration be first given to comments on soil conservation, which begins with the last paragraph on page 3 of our statement.

Let me say that we believe in and support the soil-conservation technical-assistance program. Also that flood control should begin at the top of the hill where the first trickle of water starts. This should be an underlying principle.

A top-of-the-hill program involves the following:

(1) Conversion of land to use best adapted from standpoint of long-time flood protection and profit.

(2) Improvement in cropping system through crop rotation.

(3) Improvement by additional pasture and forest cover.

(4) Detention structures.

These detention structures catch water and release it gradually so that the smaller streams do not overflow. Such structures, together with other soil-conservation measures, cannot control big floods. We must have in addition a large number of flood-control and multiple-purpose reservoirs, under programs of the Corps of Engineers and the Bureau of Reclamation.

Without further reading of our statement relating to soil conservation I am going to ask you, Mr. Chairman, to allow Mr. Heidrich to offer his comments and also that members of the committee ask Mr. Heidrich any questions they have in mind relating to soil-conservation programs before we proceed with other sections of our statement.

Mr. JONES. You may proceed, Mr. Heidrich.

Mr. HEIDRICH. Mr. Chairman and committee members, our National Association of Soil Conservation Districts is the association that represents the supervisors of the districts in the United States, of which there are something like 2,400. You may wonder why we, who are interested merely in soil and water conservation, want to associate ourselves with these other organizations with representatives before you. It is because we feel that our interests are along the same lines, although we are not advocates of flood-control measures as they are generally known, that is, big-dam measures.

We do not in any way think when we advocate soil-conservation measures as flood-prevention measures that it will in any way do away with the need of these large dams. Not at all. I think it is a question as to the exact amount of flood control or prevention that conservation measures will do, but we know they do a great amount of good.

This year our national convention passed quite a few resolutions regarding various matters, and I want to read this one to you which has a direct bearing on our appearance here:

"We have recommended that legislation be prepared and presented to the Congress which would force any Government agency seeking funds for the construction of large dams to include in the estimated cost of such dams the cost of adequate water- and silt-control measures on the watersheds above the proposed dam sites and, further, to provide that these measures be carried forward and established concurrently with or prior to the construction of the dam itself."

I think it is rather obvious why we think that these soil-conservation and water-conservation measures should be taken care of possibly even before the dam is constructed, because these measures alter flood conditions. They alter the water-flow timetable to such an extent that sometimes it is necessary to take them into considerable account in designing large structures.

That is about all that I have in the way of a statement to you, except, of course, I hold myself ready to answer any questions I can that might be put to me.

Mr. JONES. Mr. Heidrich, have you given any consideration as to the requirements in the way of funds that are necessary to carry on a comprehensive program of land treatment to produce flood control throughout the entire country?

Mr. HEIDRICH. Yes, sir. We have given it a lot of thought, Mr. Chairman. It is no use saying that a certain huge sum of money could be appropriated now and made the best use of, because it takes a while to start such a program. At present I would say you could very well make use of possibly 20 to 30 million dollars a year additional appropriation to the Soil Conservation Service for assistance to watershed associations and soil-conservation districts for this work. When they once get under way so that there will be no wastage of funds, $100,000,000 a year would not be too much to take care of this work.

I believe there would be no money better spent in flood-control work than for this purpose.

Mr. JONES. Have you examined some of the proposals now pending before Congress and analyzed the amounts required for the capital investment as compared to the amounts required for the land treatment?

Mr. HEIDRICH. In a general way, Mr. Chairman. If you have any specific questions maybe I can answer them. You mean the ratio of one to the other?

Mr. JONES. Yes.

Mr. HEIDRICH. I can make just this one general statement: that the ratio of moneys required for the conservation work above various dam sites is very small compared to the structure cost.

Mr. JONES. Take the Green River report that is now pending, House Document 261, Eighty-second Congress—the Green River in Kentucky and Tennessee. Ninety-seven percent of the entire benefits of that project will be in "associated benefits." Three percent will be flood control. I do not think there is any project now pending, or with funds that have been authorized, in which flood-control benefits 25 percent.

Would you think it would be wise for Congress to authorize the works where it could proceed, or would it be better to wait until such time as the national emergency has passed to execute those works?

Mr. HEIDRICH. Well, sir, being as how these projects in a way pay for themselves and they afford protection of property and lives and and our soil, I think it would be a mistake to put off this work until the emergency is over. If I could have a guaranty that the emergency would be over in a year or so that would be a different proposition, but this seems to be an almost endless way of life we have adopted now, and I doubt very much if such work should be put off.

Mr. JONES. On this basis of the reports showing economic justification for Federal investments in these agricultural programs, the ratio of production as compared with the ratio of cost shows a decided increase in production and in return.

Mr. HEIDRICH. That is correct, sir.

Mr. JONES. If it will reflect to the benefit of the Federal Government in increased production, will it not have the same reflection on the farmer to make these improvements?

Mr. HEIDRICH. Yes, sir.

Mr. JONES. Why is it necessary then that we take on a land-management program under the guise of flood control to make these investments to individual farmers to carry out soil conservation when the same thing will benefit him directly?

Mr. HEIDRICH. That is the same question that has been asked about all the conservation efforts, and I think this is the answer. You take a given farm that has been under cultivation for possibly 100 years and the damage that has been done to that farm through malpractices or ignorance, or whatever you want to call it. That has contributed. It is true that almost every measure that farmer could take to safeguard his land would immediately bring him greater benefits in productivity and in net returns to himself, but in many cases the costs of these improvements in money and in the disruptions of his farm enterprise are so great that he does not consider putting them in, and when he does he tells himself, "I will do this today, and this next year."

Without further reading of our statement relating to soil conservation I am going to ask you, Mr. Chairman, to allow Mr. Heidrich to offer his comments and also that members of the committee ask Mr. Heidrich any questions they have in mind relating to soil-conservation programs before we proceed with other sections of our statement.

Mr. JONES. You may proceed, Mr. Heidrich.

Mr. HEIDRICH. Mr. Chairman and committee members, our National Association of Soil Conservation Districts is the association that represents the supervisors of the districts in the United States, of which there are something like 2,400. You may wonder why we, who are interested merely in soil and water conservation, want to associate ourselves with these other organizations with representatives before you. It is because we feel that our interests are along the same lines, although we are not advocates of flood-control measures as they are generally known, that is, big-dam measures.

We do not in any way think when we advocate soil-conservation measures as flood-prevention measures that it will in any way do away with the need of these large dams. Not at all. I think it is a question as to the exact amount of flood control or prevention that conservation measures will do, but we know they do a great amount of good.

This year our national convention passed quite a few resolutions regarding various matters, and I want to read this one to you which has a direct bearing on our appearance here:

"We have recommended that leglislation be prepared and presented to the Congress which would force any Government agency seeking funds for the construction of large dams to include in the estimated cost of such dams the cost of adequate water- and silt-control measures on the watersheds above the proposed dam sites and, further, to provide that these measures be carried forward and established concurrently with or prior to the construction of the dam itself."

I think it is rather obvious why we think that these soil-conservation and water-conservation measures should be taken care of possibly even before the dam is constructed, because these measures alter flood conditions. They alter the water-flow timetable to such an extent that sometimes it is necessary to take them into considerable account in designing large structures.

That is about all that I have in the way of a statement to you, except, of course, I hold myself ready to answer any questions I can that might be put to me.

Mr. JONES. Mr. Heidrich, have you given any consideration as to the requirements in the way of funds that are necessary to carry on a comprehensive program of land treatment to produce flood control throughout the entire country?

Mr. HEIDRICH. Yes, sir. We have given it a lot of thought, Mr. Chairman. It is no use saying that a certain huge sum of money could be appropriated now and made the best use of, because it takes a while to start such a program. At present I would say you could very well make use of possibly 20 to 30 million dollars a year additional appropriation to the Soil Conservation Service for assistance to watershed associations and soil-conservation districts for this work. When they once get under way so that there will be no wastage of funds, $100,000,000 a year would not be too much to take care of this work.

I believe there would be no money better spent in flood-control work than for this purpose.

Mr. JONES. Have you examined some of the proposals now pending before Congress and analyzed the amounts required for the capital investment as compared to the amounts required for the land treatment?

Mr. HEIDRICH. In a general way, Mr. Chairman. If you have any specific questions maybe I can answer them. You mean the ratio of one to the other?

Mr. JONES. Yes.

Mr. HEIDRICH. I can make just this one general statement: that the ratio of moneys required for the conservation work above various dam sites is very small compared to the structure cost.

Mr. JONES. Take the Green River report that is now pending, House Document 261, Eighty-second Congress—the Green River in Kentucky and Tennessee. Ninety-seven percent of the entire benefits of that project will be in "associated benefits." Three percent will be flood control. I do not think there is any project now pending, or with funds that have been authorized, in which flood-control benefits 25 percent.

Would you think it would be wise for Congress to authorize the works where it could proceed, or would it be better to wait until such time as the national emergency has passed to execute those works?

Mr. HEIDRICH. Well, sir, being as how these projects in a way pay for themselves and they afford protection of property and lives and and our soil, I think it would be a mistake to put off this work until the emergency is over. If I could have a guaranty that the emergency would be over in a year or so that would be a different proposition, but this seems to be an almost endless way of life we have adopted now, and I doubt very much if such work should be put off.

Mr. JONES. On this basis of the reports showing economic justification for Federal investments in these agricultural programs, the ratio of production as compared with the ratio of cost shows a decided increase in production and in return.

Mr. HEIDRICH. That is correct, sir.

Mr. JONES. If it will reflect to the benefit of the Federal Government in increased production, will it not have the same reflection on the farmer to make these improvements?

Mr. HEIDRICH. Yes, sir.

Mr. JONES. Why is it necessary then that we take on a land-management program under the guise of flood control to make these investments to individual farmers to carry out soil conservation when the same thing will benefit him directly?

Mr. HEIDRICH. That is the same question that has been asked about all the conservation efforts, and I think this is the answer. You take a given farm that has been under cultivation for possibly 100 years and the damage that has been done to that farm through malpractices or ignorance, or whatever you want to call it. That has contributed. It is true that almost every measure that farmer could take to safeguard his land would immediately bring him greater benefits in productivity and in net returns to himself, but in many cases the costs of these improvements in money and in the disruptions of his farm enterprise are so great that he does not consider putting them in, and when he does he tells himself, "I will do this today, and this next year."

In other words, I think it is very amply demonstrated that in most cases to put a complete plan on the farm for the preservation of that land takes up to 20 years if you leave it up to the farmer, and that is too long to wait.

Mr. JONES. Most of your programs are 10 and 15 years, as contemplated by the Soil Conservation Service.

Mr. HEIDRICH. That is correct, sir. That is the completed project.

Mr. JONES. Take a project such as is contemplated in the Missouri Valley. The total amount required to carry out the land-treatment program is between 8 and 9 billion dollars on the basis of 1949 costs, of which about $3 billion would be in Federal payments. I think that is a 30-year program.

The next question is, Where are you going to get that money from?

Mr. HEIDRICH. I realize the tremendous sum of money. Yes, sir.

Mr. JONES. Then multiply that by the watersheds all over this country and we get to an impasse where we cannot do anything.

Mr. HEIDRICH. I have this to suggest in that respect, Mr. Chairman: There are a lot of these estimates as to the costs of such measures on the land that in many cases take into account other agricultural programs than plain soil and water conservation and control. If all of these other projects and propositions were deleted from the plans it would not cost nearly that much. I will not venture even to give a guess as to what could be saved, but it would be very considerable.

Mr. JONES. Do you think a program could be accomplished by the authorization of and the appropriation for the capital improvements and a technical-assistance program without making payments similar to ACP over and beyond those made available at the present time?

Mr. HEIDRICH. At the present time I doubt that very much. In other words, I am saying I do see the usefulness of an ACP program if properly controlled and handled.

Mr. JONES. Under the soil-conservation proposal I believe there are 19 practices that are accredited for receiving ACP payments over and beyond those made under the general law. Do you think it should be a Federal responsibility in the guise of flood control to make reimbursements to a farmer for building fences?

Mr. HEIDRICH. In most cases, and as a general statement, I will say, No, sir; I do not. On that we have a very definite stand regarding the ACP program and it is this——

Mr. JONES. I want to say this: We are sympathetic to the aims and objectives to which the Agriculture exponents aspire, but we see a practical problem when you talk about 10 and 15 and 20 billion. To get the work done at the earliest possible time within the confines of our fiscal possibilities we are going to have to reexamine our whole position.

Mr. HEIDRICH. I think that is correct, sir. I would like to make this statement respecting our position on ACP. We say that if there are to be ACP payments to farmers for conservation measures they should be limited to the measures that are of a permanent type.

Mr. JONES. Would you name them?

Mr. HEIDRICH. I can name some of them. Contour planning; dams for holding water in small structures.

Mr. JONES. Those are capital improvements.

Mr. HEIDRICH. That is right.

Mr. JONES. Let us go to the land-management part that is separate and apart from making capital investments in things like dams. Terracing would be one.

Mr. HEIDRICH. That would come under it.

Mr. JONES. That is a permanent improvement.

Mr. HEIDRICH. Yes.

Mr. JONES. If they are protected and you have people there to see that they are protected. Strip farming is another.

Mr. HEIDRICH. Yes.

Mr. JONES. Grassing is another.

Mr. HEIDRICH. To a certain extent.

Mr. JONES. Tree planting is another one.

Mr. HEIDRICH. Yes.

Mr. JONES. What others would you include in that category?

Mr. HEIDRICH. I would rather say the ones I would not include.

Mr. JONES. That is fine. What would you not include?

Mr. HEIDRICH. There may be some I would miss in including them, but when you come to the applications of lime and superphosphate, and so forth, it is very questionable in my mind as to the public benefit of that treatment versus what it costs people——

Mr. JONES. In that you disagree with the Department of Agriculture?

Mr. HEIDRICH. I most certainly do, except where it is done once to establish a grass sod, let us say, on land that requires a grass sod for its own protection or for water retardation. When it comes to the——

Mr. JONES. You mean when it is taken out of production of a more profitable crop to be put into grass?

Mr. HEIDRICH. If you like, yes. The application of phosphates and lime—their benefits are so obvious to a farmer that I see no reason—I know you can show plenty of arguments why it is to the public benefit, and it is, but the benefits are so obviously to that farmer that I see no reason why we should continously year after year pay for that material going to the farmer.

I am a farmer and I have made use of the ACP program from the start. My total income is from farming, and that is the way I feel about it, and I believe that is the way most—I will not say all, but most of our supervisors feel.

Mr. JONES. Do you not think that unit demonstration farms would be an invaluable assistance in affected areas where flood control projects are under way as further inducements to farmers to put into practice sound agricultural methods that would contribute to flood control?

Mr. HEIDRICH. I think anything of that nature would be worth while. That one in particular I think would be worth while. Yes, sir. I certainly do.

Mr. JONES. Would it not reduce the amount of Federal funds that would be required to carry out the general program?

Mr. HEIDRICH. I would rather put it another way, sir. I would rather say you would be more bound to get your money's worth for whatever was spent.

Mr. JONES. The reason I say that is, I have a farm and I have lived on the farm, and I have a neighbor who has a unit demonstration farm. I saw his increased production with proper use of fertilizer and better agricultural practices, and I began to put in the same practices

he had, at my own expense. Yet I came out far ahead of the hounds. If it had that influence on me I would naturally presume that the other people in that immediate locality would have the same benefits. If those unit test demonstrations could be used along with technical assistance, maybe we could accomplish the same thing that is now proposed.

Do you have enough money to carry it?

Mr. HEIDRICH. I think you could if you did not consider the time element to be too important.

Mr. JONES. As you recall, under the program now being carried out by the Department of Agriculture, 70 percent of the land-treatment program must be operative before they will go in and make the capital improvements. That is a condition precedent. Could we not offer that as a condition precedent to the farmer in a given area to do that work voluntarily rather than at the expense of the Federal Government?

Mr. HEIDRICH. I do not know whether you would get it done on time or not, Mr. Chairman. I do not know just how that would work out. I suppose a lot would depend on how it was managed and how it was put into effect.

Mr. JONES. But you would have almost the same period required for putting it into operation if the Federal Government paid for it, would you not?

Mr. HEIDRICH. No, I do not think so, for this reason: If you are going to start a program that is paid for and authorized, you get under way and it starts tomorrow, or next year, and we will say that it takes 15 years to do it. However, it might take you 15 years to get some of those farmers to start with merely a demonstration. I know in many cases it takes a lot of time to get a farmer to start when you send in your technicians or when the district supervisors send them in.

I can point to farms in my own district that we have been working on for 7 years to start a program, and the farmers there have not agreed to it yet, despite the fact that their neighbors are going ahead full blast and showing results.

Mr. JONES. You are from North Carolina?

Mr. HEIDRICH. No, sir. I am from West Virginia.

Mr. JONES. I was going to take a project in North Carolina. Let us say that the farmers at the Pee Dee River are told by the Federal Government, "We are going to authorize a project down there and if you go ahead and do this work, then the Federal Goyernment is going to come down there and build these dams and give technical assistance, and that sort of thing." Do you not think that would be an inducement to those farmers to the point where they would go ahead and put their soil-conservation practices into effect?

Mr. HEIDRICH. You are asking me whether I do not think that would enhance it?

Mr. JONES. Do you not think that would work?

Mr. HEIDRICH. I sort of think it would.

Mr. JONES. At least it has never been tried, has it?

Mr. HEIDRICH. That is correct. I do not know whether it has not been tried. In a way it has been tried in the Tennessee Valley, I guess.

Mr. JONES. And it has been quite successful down there too, has it not?

Mr. HEIDRICH. I believe so, but whether it is successful from the standpoint of a dollar's worth of good received for a dollar spent, I cannot tell you. I do not know.

Mr. JONES. Let us go back to the Tennessee Valley. You know when they first started that program the whole purpose of the Tennessee Valley Authority in carrying out its agricultural program as directed by Congress through the Extension Service was to develop a program where the farmer would take up this work on his own initiative.

Mr. HEIDRICH. That is correct.

Mr. JONES. So this method presupposes that we are going to increase the Federal participation, and rather than make the farmer an independent we increase his dependency on the Federal Government.

Mr. HEIDRICH. I think you are right there.

Mr. JONES. Is that not a philosophy that would have to go with such a program?

Mr. HEIDRICH. I think that is correct and I think you have put that just about right, but I think in view of the urgency of this work, let us say, I will not say it is justified, but I will say there is a darned good chance it is justified.

Mr. JONES. Particularly in the areas where you had extreme drought and dust problems as well as flood-control problems.

Mr. HEIDRICH. That is correct, and I would say the worst areas would be the first ones to start on. Naturally they are the worst and it would cost the most. When a thing like this is started mistakes are going to be made, but at the same time results must be obtained in pretty short order or we are going to be in trouble.

Mr. JONES. Are there are further questions?

(No response.)

Mr. HEIDRICH. I thank you, Mr. Chairman; if I may be excused.

Mr. JONES. Yes, sir. We are delighted to have had you and we thank you very much for giving us the benefit of your thoughts on this program.

Mr. RISING. Mr. Chairman, the last 5 pages of our statement gives our views relating to watershed protection and proposes a program for adding 20 to 100 million dollars per year to the cost of the technical-assistance program, which we understand is now costing about $60 million a year.

The last page of our statement contains a summary, which shows we would add $20 million this year to the $60 million technical-assistance item, and next year $40 million, making it a total of $100 million next year, when we consider both the watershed-construction program and the technical-assistance program.

We understand one of the things that this committee is concerned with is the fact that all of these programs, authorized or proposed to be authorized, will run into many billions of dollars. While you recognize that all of these programs have merit you wish to find a way where certain most essential things can be done within the limits of the economy of the United States.

Mr. JONES. Let me ask you a question at that point, if you do not mind my interrupting you.

Mr. RISING. I would be very glad to try to answer it. If I cannot answer it, these other gentlemen can.

Mr. JONES. There have been several suggestions made that we have an impartial board created. Some have suggested it be a creation of the Legislature or of the committees, and that it should be appointed by the House and Senate to analyze and give a reevaluation of the projects and have a priority established based upon the ratio of benefits to costs, giving higher priority to those having the better benefit ratio. Others have suggested that that same function be carried out by a board appointed by the President and responsible to the Executive.

What is your thinking along that line, if any?

Mr. RISING. Of course, that is a subject that we have all given a great deal of thought to. I do not believe that the majority of the members of our organizations favor a separate impartial board, or separate agency. We would, I think, favor Congress setting up its own staff, or adding to the staffs of your present committees, or by whatever methods Congress may devise to inform itself. But we doubt that setting up a separate agency would be helpful.

Mr. JONES. Do you think it would be wise to transfer the functions of the various departments into a single agency?

Mr. RISING. I will have to answer that personally because I have not discussed it with my colleagues; I do not. I think that our agencies are perhaps too large now. I would think we would get more efficiency if they could be in some way divided rather than combined. I do not feel personally by consolidating the committees of Congress a few years ago it added materially to efficiency. My idea is that our separate committees were better informed on individual subjects and got along better than after we consolidated a number of committees. It simply means that you have a supercommittee over a group of smaller committees, and you have in the end more committees than you had before.

I think that would be the way it would work out in the consolidation of the Government construction agencies. You would simply have more overhead and less efficiency.

Mr. JONES. I suppose that your reasoning would then follow that the same fatalities would attend the creation of a single Department of Public Works?

Mr. RISING. That is correct. We have sought to bring to you something to consider. The time we have devoted to it will not permit me to say that the plans we have submitted are perfect, but we have made inquiry and we find that out of a very large program, for example, the Corps of Engineers have under construction or have had under construction projects to the extent of about $5 billion, and that a large part, about 68 percent of that program, is completed. We find the same general condition existing in regard to reclamation projects.

While the Bureau of Reclamation has nearly $7 billion of authorized projects, yet the program that they are actually working on has a cost of only about $2,700,000,000. That program is 80 percent complete. In 2 or 3 years, without new starts, the program they are actually working on will be entirely completed.

We feel it is unwise to go along with no new starts, and some additional projects should be added each year.

On page 5 of our statement we make a suggestion that a floor or a minimum of $1 billion a year be set up for a construction program for the three services, divided along the lines of perhaps $550,000,000

to $600,000,000 for the Corps of Engineers; $300,000,000 to $325,000,000 for the Bureau of Reclamation, and $100,000,000 for the Soil Conservation Service. That would be a minimum program during this emergency or defense period.

We recognize that additional sums would need to be appropriated after the emergency is over.

Mr. JONES. Is that based upon the 6-year schedule?

Mr. RISING. Well, yes. We have outlined approximately a 6-year program and that would mean, under the figures that we have suggested, the projects now under construction could be completed and some new projects could be started every year. We do not believe that we should go on forever without new starts and run out of a program.

Mr. DONDERO. A question, Mr. Rising?

Mr. RISING. Certainly, Congressman.

Mr. DONDERO. I notice among the representatives with you is Mr. Macleay, of the Mississippi Valley Association. In that connection I am rather intrigued and somewhat delighted to see a statement on page 2 that you do not believe in the policy of no new starts or improvements in this country. In that same program I noticed you asked for or suggested $1 billion annually for construction of flood-control projects, and so on, and $1,500,000,000 to $2 billion in normal years for the development of our water and land resources.

I am just wondering how you reconcile those figures with the fact that the Mississippi Valley Association has vehemently opposed the St. Lawrence seaway.

Mr. RISING. I will let Mr. Macleay answer that question, I think.

Mr. MACLEAY. I am not prepared to discuss the St. Lawrence seaway with my good friend, Mr. Dondero. We came up here on a program that has to do with the Mississippi Basin and flood-control and soil-erosion-control projects within the borders of the United States. I do not care to invade foreign countries at the present time. I will take that up later.

Mr. DONDERO. Then you are not in favor of ECA?

Mr. MACLEAY. To a limited extent.

Mr. DONDERO. I notice in your statement here you were speaking of building some billion dollars' worth of public works in France, for example.

Mr. MACLEAY. It seems to me, Mr. Dondero, that we should pay particular attention to building up our own resources in this country.

Mr. DONDERO. And I join you in that.

Mr. MACLEAY. I know from facts that I have that 2 million tons—that is, facts that I am given by the Geological Survey—that 2 million tons of mud is deposited at the mouth of the Mississippi River every day. That is 730 million tons of mud and silt that goes down the Mississippi River every year from erosion. That is topsoil that is making this country great and rich, and if that goes down to the sea it is lost to us forever. You cannot place a value on it.

Mr. DONDERO. Perhaps if we developed the St. Lawrence Seaway with its power resources you would in some way offset that loss that you folks suffer in the Mississippi Valley.

Mr. MACLEAY. You think you could hold that soil back with that?

Mr. DONDERO. We could hold that power for the benefit of the

people of the United States. It is going to waste every second that we pause at the rate of 2,200,000 horsepower.

Mr. BAKER. Mr. Chairman, is there any flood control involved in the St. Lawrence seaway?

Mr. DONDERO. The Lord favored us in that section and we do not have to have it.

Mr. RISING. Mr. Chairman, I do not think we are prepared to say we are not for any of these point 4 programs, but we do want to discuss the fact that those programs are going forward and nothing is being done along similar lines under this "No new starts program" in the United States. Just before I came up here the thought occurred to me that I would reach in my file and take out almost the first Information Service releases I came to from the Department of the Interior. I am going to read the titles of three or four of these.

"Reclamation Mission To Aid Point 4 Irrigation-Hydro-Power Program in Lebanon." It names an engineer who was going to Lebanon in charge of a 21-man mission on the part of this country to carry forward the point 4 program there.

The next one reads: "United States Reclamation Engineers To Study Pakistan Water-Logged Lands."

Cooperation with all the free nations in the maximum beneficial development of their water resources is an important objective of the Bureau under the President's point 4 program during Reclamation Golden Jubilee Year of 1952.

A United States irrigation expert to help India plan 2,000 wells in famine relief.

Another Bureau of Reclamation engineer is going to that country under the point 4 program.

Mr. DONDERO. May I say to my friend that while in London, England, recently there was placed under the door of my room every morning the news as to the amount and for what ECA money was being expended, we will say, in the undeveloped regions of the world. I was amazed to see that a great deal of it was going for sawmills and roads in Africa. Undoubtedly that is desirable to develop a country, but I join my warm and able friend, Mr. Macleay, about developing the resources of our own country. Let us not forget our own people here in the United States while we are doing it.

Mr. RISING. I have two or three other references.

"Reclamation Engineer To Help Liberia Select Sites for Shallow-Water Harbors."

Another one: "Reclamation Engineers To Join Mission in India on Point 4 River Development Program."

It is mentioned there that the water development project will be financed during the current fiscal year by a special Indo-American technical cooperation fund.

Finally, this one is the most revealing of any of them, I think:

"Reclamation Engineer To Head United States Commission on Large Dams."

It says an engineer of the Bureau of Reclamation has been elected chairman of the United States Committee of the International Commission on Large Dams. It says this Commission, representing 24 foreign countries, will meet this fall coincidental with the principal

meeting of the centennial of the American Society of Civil Engineers in Chicago, indicating that we are going to help build dams in all of those countries.

As I said before, we are not prepared to take issue with the fact that some of those things are necessary, but we cannot see why we should spend all of the money that is available for water-resource development in those countries and leave our own developments entirely frozen.

Mr. JONES. I wish we could give you the answer to all of those problems. Unfortunately we do not have them and we do not have a way in which to fashion the thing for the American people to the extent of correcting all of the ills, and we had better confine ourselves principally to ways and means by which we can proceed to get a more orderly schedule in the execution of works and projects we expect to build.

There is a considerable number of projects that have been authorized, and I think we have had something over 900 projects that are authorized on which no works have been committed. There are about $8 billion worth. When we come to the projects, we have spent approximately $39 million on planning, and there is a great likelihood that no works will ever be done on those projects. In order to eliminate the probability of making poor investments in those projects, what is your notion as to eliminating the so-called planning stage?

Mr. RISING. Well, that is a difficult matter. Of course, some preliminary investigation must be made.

Mr. JONES. I am not talking about the functions of planning now, because that is inherent in every engineering feat, that you certainly have to make some planning. Planning and actual construction have been made divisible to the point that it consumes about 3 years of planning and stretches out the time of authorization until the work commences.

Mr. RISING. We doubt that there has been great waste in past planning. We think that most of the planning was necessary to determine whether those projects were feasible.

Mr. JONES. We have numerous projects, Mr. Rising, where the planning has cost more than the original estimated cost of the project, and no work has ever been done.

Mr. RISING. I have not had an opportunity to look over any of those statements regarding such projects and, therefore, I do not feel I am in a position to answer your question. I think we have gone over what our suggestions are, Mr. Chairman, and I think we are ready to try to answer any questions you have.

Mr. JONES. Let me ask you a question, Mr. Rising. At the present time respecting the Corps of Engineers, the time elapsing from the date the survey resolution is passed by the Public Works Committee until work is actually commenced on the project is 10½ years. That is the time that is elapsing at the present time on those projects. What in your opinion could this committee do to eliminate that unusually long delay?

Mr. MACLEAY. It seems to me, Mr. Chairman, from what I observed since 1936 when we got our flood-control program for the first time and when we got a flood-control policy then, there were a great many projects approved by the Congress and authorized where it appeared

at the time they were authorized that they were very good projects and meritorious, but the Congress did not see fit to appropriate money to carry on the work and get them started.

Mr. JONES. Let me ask you this: Were not most of those projects contained in the 308 reports, which were very scanty reports as compared to the surveys that are conducted at the present time?

Mr. MACLEAY. The 308 reports were the basis. Yes; they were the basis. That was the first study made in the United States of every water-resource basin in this country, to determine if possible the best use that could be made of the water resources of each basin. It was the Mississippi Valley Association that sponsored that in the Congress in 1925. It was kicked out of the Senate and we got it in the 1927 bill. That has been our baby and we think the 308 reports have been a splendid thing for this country. It formed the basis and gave us the idea, and on that has been built our entire flood-control program.

Mr. DONDERO. May I ask, Mr. Macleay, do you think it would be wise for this committee to take a stand or formulate a policy of not authorizing projects unless it is intended that that project is going to be constructed and not laid on the shelf and forgotten?

Mr. MACLEAY. I think so, Mr. Dondero. I do think so. I think we have come to the point where we have authorized a great many projects—more than we can afford to build at the present time.

Mr. DONDERO. As the chairman already indicated, we have $8 or $9 billions lying on the shelf. Some of them they never intend to construct, and yet we have gone through all of the procedure here and raised the planning money, and nothing has been done with it.

Mr. MACLEAY. I do not know of any in the Mississippi Basin that they do not intend to construct. There may be one or two where local antagonisms have grown up. I know in Missouri there are two or three there that I do not think will ever be built because they will never get the consent of the people of the State for the building of them. The Army engineers made two studies on the Current River. They have never come to the Congress because the State went up in the air and they will not stand for it. No Governor of the State of Missouri would ever dare approve a project of that kind, in my opinion.

Mr. DONDERO. Suppose the Public Works Committee took the position of saying to the Army engineers when they came before us or when any Member of Congress asked for a project, "If this committee authorizes your project, do you intend to construct it?" If they said, "No," we might better stop right there and not spend another dime.

Mr. MACLEAY. I do not think it is the Army engineers, Mr. Dondero, that intend or do not intend to construct. They will construct whatever Congress directs them to construct and gives them the money to build them with.

Mr. DONDERO. And it depends on the Appropriation Committee by what yardstick they will build it.

Mr. MACLEAY. That is correct.

Mr. DONDERO. But I think there should be a reasonable degree of certainty that the Government intends to proceed to construct a project if this committee is asked to authorize it. It seems to me as a policy we can save a lot of money for the American people by taking that course.

Mr. MACLEAY. It would seem to be common sense, would it not?

Mr. DONDERO. It surely would.

Mr. RISING. I would like to refer to Mr. Dondero's question.

Mr. JONES. May I proceed with one more question on the point that Mr. Dondero raised. Mr. Macleay, what is your thinking along the lines of deauthorizing projects that are obsolete; where there was originally local interest, but there is no local interest manifested any longer in the projects and they are on our books and bring us nothing but embarrassment?

Mr. MACLEAY. If there is no local interest sufficient to support the project it should be deauthorized.

Mr. JONES. How would you suggest that those projects be deauthorized?

Mr. MACLEAY. I think it should be put up to the local group—the State and the local people—and hearings should be held and they should be given an opportunity to express their views as to whether or not the projects should be deauthorized.

Mr. JONES. Silence is usually consent. So where they are not exercising any vigilance with respect to the project would it be natural for us to presume there is no further local interest?

Mr. MACLEAY. I do not think it is quite fair to take silence as an answer there because people are not informed. I should think, sir, if the thing is put up to them then they will study it, but the average citizen does not know much about these things, and the average municipality is rather careless about things of this kind.

Mr. JONES. The Members of Congress should properly have a reevaluation of projects that have become obsolete. There is no way at the present time in which we can bring about a review except in special cases. With the tremendous amount of projects of the Corps of Engineers which they bring to the Budget, the procedure is that the Budget Bureau approved for them an appropriation request to take over to the Congress. There is no supervision over those projects and no reexamination or reevaluation.

Do you not think it is proper that those projects that have been on the shelf a great number of years and that are taken up for appropriations should have a review by this committee so as to be analyzed as to the economic factors that attend the merits of the case?

Mr. MACLEAY. I think it would be well for the committee to direct the Army engineers to submit those projects back to the people where the project is located for further hearings to determine whether or not they should be deauthorized.

Mr. JONES. Do you think it would be quite proper then if we would put some time limitation on an authorized project and that would be a more useful and more worth-while procedure, than having the money spent on it from time to time?

Mr. MACLEAY. I am very doubtful of your being able to make a rule that would cover all projects.

Mr. JONES. If there were a statute of limitations, so to speak, that would run against it, they would still have the opportunity to come before the Congress for reauthorization, and then at that time they would get the same scrutiny and attention that they received in the first instance. Do you not think that would be a wise policy?

Mr. MACLEAY. It is worth consideration—serious consideration.

Mr. DONDERO. May I support my chairman in his views on that? I say that for this reason: In the Eightieth Congress I tried to do exactly what the chairman has suggested by a bill to take them off the shelf. Immediately I found myself the center of a little war waged against me by the Army engineers and others. They did not want anything taken off the shelf. However, since that time the Army engineers have said to us, or at least their chief has said that he would approve that kind of a policy of deauthorizing. Unless the chairman's suggestion is followed that a statute of limitations be set up we will find the same thing, in my opinion, happening before this committee that happened in the Eightieth Congress.

I think a statute of limitations is a wise policy for this committee to pursue. Then if they do not come in they are taken off the books automatically within a given number of years.

Mr. MACLEAY. There comes up in my mind Tuttle Creek. It was authorized in 1938. Opposition developed to it in the Blue River Valley which would have been to a certain extent inundated.

Mr. JONES. That situation is out there from now on. They will never get together there.

Mr. MACLEAY. The great majority of the people of the State of Kansas are in favor of building Tuttle Creek today.

Mr. JONES. There is some opposition to that point of view.

Mr. MACLEAY. There is some opposition, but you had someone here the other day who said if it would be built as a dry dam there would be less opposition. That has been our position. We have been urging the Army engineers to change the plans for Tuttle Creek Dam and make it a dry dam similar to the dams they have in the Miami Conservancy District, and similar to the two built on Farm Creek above Peoria by the Army engineers. If that can be done a lot of the opposition to Tuttle Creek in the Blue Valley will stop, in my opinion.

Their own representative, Mr. Stockwell, said the same thing in his testimony the other day to you.

Mr. RISING. Mr. Chairgman, I think we will get some more comments on this question, by those on my left.

Mr. MCBRIDE. Mr. Chairman, I was thinking particularly of some projects that are of particular interest to the State of Oklahoma and Arkansas that happen to be located in the State of Kansas. On the theory of strictly local opposition you may upset the development on an entire basin. I think there are a lot of situations that would develop where you just could not limit a project strictly on the basis of local opposition.

On the other hand, we have a project in the State of Oklahoma that was authorized in 1936. We have been trying to get money appropriated for it from that day to this. It happens to be in an isolated part of the State as far as population is concerned, but yet it is absolutely essential to the development of the North Canadian River from the standpoint of municipal water supply, flood control and a reclamation project. Yet we just have not been able to get the Appropriations Committee to come across with the money to start the construction of that project.

So simply because the project has been authorized for a long time—and that one happens to be as long as any of them have been authorized,

since 1936—it does not necessarily preclude them from still being good projects.

Mr. JONES. That is true, but do you not think they should be reappraised in the light of changing conditions?

Mr. MCBRIDE. Yes, sir.

Mr. JONES. And in the light of technological advances which were made and carried out by research, and that they should be reviewed by the appropriate committees of Congress?

Mr. MCBRIDE. Yes, sir. I am heartily in accord with keeping these projects current with their economic worth to the program of developing our land and water resources.

Mr. JONES. Do you think it would be far wiser if in the future we did not have a recurrence of the same thing you are talking about? We have to have a beginning some place.

Mr. MCBRIDE. Yes, and in that connection I wonder whether or not consideration has been given to handling flood-control projects like we do public roads projects. We come before this committee and you make an authorization for 2 years, and you make a contract authorization at the same time.

Mr. JONES. But those are contractual relations between the States where the State is actually going to do the work, and you do not have the same situation as you do in a Federal project when the Federal Government has the sole interest.

Mr. MCBRIDE. Let us take the situation of local protection projects.

Mr. JONES. I appreciate the desirability of something like that, and certainly this committee will not be indifferent to the opportunity that would be afforded by such a procedure if we knew that the work was being carried out. Of course, we have the waste in the priority of projects.

Mr. MCBRIDE. That is right.

Mr. JONES. In my own State there are works going under way at the present time that possess a very low ratio of benefit to cost, whereas we have other projects that have a high ratio of benefit to cost which are not under way. I would like to be able to say to the Corps of Engineers, "You start the project that is going to contribute the most to the people," but unfortunately we do not have that situation existing.

Mr. DONDERO. Take that case in Oklahoma. After a lapse of 16 years, do you not think there should be a reappraisal of that project to see whether or not the ratio of benefits to costs would still stand up?

Mr. MCBRIDE. Yes, sir; I do. The fact of the matter is, having lived with that project and being the head of the State program down there since 1936 up until just the last few years, that particular project is a lot better project than it was at the time it was authorized, for the simple reason of the development in the basin and the need for other beneficial uses of water other than flood control.

But, getting back to this question of authorizing projects and contractual obligations, I wonder if on these local protection projects where the local people are supposed to put up the cost of right-of-way and operate and maintain after completion and pay for relocations, and so on, if some procedure similar to the Bureau of Public Roads' would not work, where you had local participation in the project. That way every 2 years, if the local community did not put up, the project would be out.

Mr. DONDERO. The question which you raise regarding public roads brings up the point that, while the bill provides authorization for 2 years, nevertheless that money is immediately allocated to the States, and the States expend it and the work of construction is continued. It does not lie dormant; they use it immediately.

Mr. MCBRIDE. In some cases—and, for example, I have in mind right now a specific project that was authorized in the 1950 highway bill for lands across the Washita National Forest in our State—the surveys are not even completed yet; and, although that project money was set aside for it, the best they can possibly do is to start the construction at least 18 months from now. The money is obligated now, though.

In that same regard, on local protection projects if you knew what the cost was going to be and knew what the local officials were going to put——

Mr. JONES. That could only apply to the operation of the Corps of Engineers.

Mr. MCBRIDE. That was what I was thinking about primarily. Yes.

Mr. JONES. It could not apply to the Agriculture Department program because that is rather a speculative situation, since it brings into play the contractual relationship of the individual farmer with the Government to carry out certain practices; and, if he fails to do it, then he is just out.

Mr. MCBRIDE. I think that is right.

Mr. JONES. On these reclamation projects you also have a different situation, but you have reference to the work done by the Corps of Engineers in which the State, county, and municipal governments are going to contribute to protective works and there should be some reasonable assurance given to the local community.

Mr. MCBRIDE. That is right.

Mr. JONES. That that work is going to continue and that is not going to be in excess of the estimated cost by prolonging the project over an unreasonable time.

Mr. MCBRIDE. Exactly right.

Mr. JONES. I think you have an excellent point there. In other words, it is some insurance to the local interests that their investments are going to be utilized within season.

Mr. MCBRIDE. Yes. I can cite at least three examples of where cities have voted bond issues and made their money available on the basis of an authorized project. Yet, nothing has happened and the project has gone up in price because of the inflated value.

Mr. JONES. And it breeds dissatisfaction locally and distrust of the Federal Government in carrying out its obligations.

Mr. MCBRIDE. That is right.

Mr. JONES. That is a very fine point. I think it possesses a great deal of merit.

Mr. RISING. I think, Mr. Chairman, we are in accord with the thought of this committee as we interpret it either to retain or regain more control over the construction of these water-resource projects. I am sure we would favor particularly the Congress having something to say about what projects do go forward instead of leaving everything to the Bureau of the Budget.

I think Mr. Welsh has some comments, Mr. Chairman.

Mr. JONES. We will be glad to hear from you, Mr. Welsh.

Mr. WELSH. Mr. Chairman, with respect to authorized projects, while most of our projects are in the western area which our association represents, I realize that they come before another committee, and yet the projects in the Missouri, and I believe on the Rio Grande, where they were authorized on a basin-wide basis, would come before this committee. We are either in a more fortunate or more unfortunate situation perhaps than some of the other water-resource-development programs with respect to authorized projects, because our authorized projects are very limited. Outside of the Missouri Basin and the Central Valley in California, there are only seven authorized reclamation projects on which work has not yet started, and those projects would be considerably less than 1 year's work for the Bureau of Reclamation.

When I think back to what happened in the early thirties I would hate to estimate the millions of man-hours that were spent upon projects which did not have a lasting benefit because we did not have an adequate backlog and shelf of projects that were surveyed, investigated, planned, and authorized, and ready to go. I know that was true out in the area where I was living at that time in the Boise Valley in Idaho, and from what I have heard all over the country it was pretty true generally.

I think it is just good economy and good business to have an adequate backlog of projects authorized, surveyed, and ready to go. No one can predict how long this critical situation which is confronting us today is going to continue, but one of these days we are all hopeful there will be an end to it, and we will really be giving the green light on the program for the development of the resources of this country.

I for one sincerely hope—and I know it is the thought of our association—when that time does come that we are really prepared and ready to go.

There are several other things in connection with that. One thing along that line that I think is of the utmost importance is that we have an adequate program of general investigations. In our reclamation program this year the bill which passed the House and is now over before the Senate Appropriations Committee cuts our appropriations for investigations from $5 million down to $3 million. That is beyond your control. I realize it and maybe I should not take your time here with that.

Mr. JONES. That is probably right, but I want to remind you of this fact: That House action has cut the Corps of Engineers budget from $6.2 million to $1.7 million.

Mr. WELSH. For investigations.

Mr. JONES. And the Department of Agriculture is getting just one million dollars, so you are getting more than anybody I know of.

Mr. WELSH. I cannot understand why these men who are specially interested in that program are not talking about it then.

Mr. JONES. We need your help in the eastern part of the United States to get our share.

Mr. WELSH. I think w are behind you because we have only seven authorized projects on which work has not started.

Mr. JONES. Did you succeed Mr. Polk?

Mr. WELSH. No. Mr. Polk was president, and I am secretary-manager of the association. I succeeded this gentleman here: Mr. McBride.

Mr. JONES. Is Mr. Polk still president of the national association?

Mr. WELSH. Mr. C. Petrus Peterson of Lincoln, Nebr., is president; and I would like to say Mr. Peterson will be in town tomorrow for a meeting.

Mr. JONES. I said "Mr. Polk" and not Mr. Peterson.

Mr. WELSH. Mr. Peterson will be in town, and if I may I would like to request the privilege now of submitting an additional statement for the record in case Mr. Peterson desires to do so when he arrives here.

Mr. JONES. Which Peterson are you talking about?

Mr. WELSH. C. Petrus Peterson of Lincoln, Nebr.

Mr. JONES. You are not talking about the Oklahoma Peterson?

Mr. WELSH. No, sir.

Mr. JONES. I was going to say we want to talk to him. Mr. Polk, you say, is president of the National Reclamation Association?

Mr. WELSH. He was until last fall. He has been succeeded by C. Petrus Peterson of Lincoln, Nebr.

Mr. JONES. I see.

Do you in the transaction of your official business come into contact with Mr. Polk?

Mr. WELSH. Yes. He is still our director.

Mr. JONES. When you go back you can tell Mr. Polk that you can arrest his fears because in a speech last year at Amarillo, Tex., before the National Reclamation Association, he said the chairman was going to bite somebody there playing with socialism, and you can tell him that you had been here and you did not get a single bite from any socialist.

Is there anything further, Mr. Rising?

Mr. RISING. I think, Mr. Chairman, we have had a fine opportunity to give you our views, and we are happy in closing to state that we wish to make ourselves available to you at any time to investigate any question or to take into consideration any subject on which you desire to call upon us to assist, in obtaining information or aiding you in reaching a solution of water-resource problems.

Mr. JONES. Mr. Rising, we are certainly indebted to you and to the other members of your association who appeared here today. You have always been quite helpful and it is a pleasure to have had you. We thank you most sincerely.

Mr. RISING. I thank you for the opportunity of coming, Mr. Chairman.

(Whereupon, at 3:10 p. m., the subcommittee adjourned until 10 a. m. the following day, Thursday, May 15, 1952.)

STUDY OF CIVIL WORKS

WEDNESDAY, APRIL 30, 1952

COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE TO STUDY CIVIL WORKS.
Washington, D. C.

The special subcommittee met, pursuant to adjournment, at 10:05 a. m., in room 1302, New House Office Building, Hon. Robert E. Jones, Jr., presiding; Charles D. Curran, staff director.

Mr. JONES. This morning we have on our schedule the testimony to be offered by the Tennessee Valley Authority. This is the legislative committee under the Reorganization Act for the activities of the Tennessee Valley Authority. I might say at this moment that, even though we are the mother committee or the chief legislative committee for the Tennessee Valley Authority, we have never had an opportunity since I have been a member of having a representative of the Authority testify before the committee.

We have today the distinguished chairman of the Board of Directors of the Tennessee Valley Authority. Mr. Clapp, we are delighted to have you here today to discuss some of the problems of water in relationship to the Tennessee Valley Authority.

STATEMENT OF GORDON R. CLAPP, CHAIRMAN OF THE BOARD, TENNESSEE VALLEY AUTHORITY

Mr. CLAPP. Thank you, Chairman Jones and members of the committee.

I want to say that it is a real pleasure and an opportunity to come before this committee of the House which has legislative jurisdiction over the problems of the Tennessee Valley Authority. The fact that we have not been before this committee in recent years is, I think, because the amendments and the changes and additions and modifications that were worked out during the thirties through legislative procedures, and the constant examination of the Tennessee Valley Authority program as it has come up in connection with appropriations, has mad it unnecessary to seek further change in the basic law.

With the committee's indulgence I would like to tell the story of the Tennessee Valley Authority's activities.

Mr. JONES. Mr. Clapp, before you get into that discussion I would like to make arrangements with you if it is at all posible to extend your testimony over to tomorrow at the conclusion of today's hearing due to the fact that the House meets at 11 o'clock today. In all probability we will not have an opportunity to conclude today.

Mr. CLAPP. That is quite satisfactory to me, Mr. Chairman.

Mr. CLAPP. There are really two parts to the story of the work of the Tennessee Valley Authority. One relates to the development and construction of physical works in the Tennessee River System in accord with the broad mandates and authorizations that were laid out in the basic statute which governs the work of the Tennessee Valley Authority, namely, the Tennessee Valley Authority Act of 1933 as amended. The other part of the story concerns TVA's programs and activities relating to problems of land use, water control and soil improvement outside the river bed of the Tennessee System.

I want first to describe some of the history and the nature of the assignment that the Tennessee Valley Authority received from the Congress and tell this morning what we have done in accord with that assignment. I would like first to refer to the letter of January 8, 1952, to the chairman of this committee from our general manager, which responded specifically to a series of questions propounded to us.

If I may, I would like to have that go into the record at this point.

Mr. JONES. Without objection, it is so ordered.

Mr. CLAPP. This letter, I may say by way of summary, describes the procedures that the Tennessee Valley Authority follows under the Tennessee Valley Authority Act in making surveys, in presenting plans, in seeking appropriations, and in carrying out the work which the basic law authorizes and which the appropriations provide the money for.

The comittee I am sure is familiar with the physical area in which the Tennessee Valley Authority operates. I have here a map of the Tennessee Valley region with the——

Mr. JONES. Just one moment. Mr. Clapp, did you include in with the letter the table of comparison of estimates with costs? Has that been made a part of the letter? If not, I will include it as a part of the letter.

Mr. CLAPP. I would be glad if you would, Mr. Chairman.

Mr. JONES. Then the table of costs will also be included as a part of the record along with the letter dated January 9, 1952, from Mr. John Oliver, which was directed to me.

(The letter and table referred to are as follows:)

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., January 9, 1952.

The Honorable ROBERT E. JONES, JR.,
Chairman, Subcommittee To Study Civil Works,
House Office Building, Washington, D. C.

DEAR MR. JONES: This is in response to your request for information concerning authorization procedures followed in connection with TVA projects. The specific questions which you asked and our answers thereto are set out below.

1. How are surveys initiated?

Surveys are initiated on the basis of approval by the TVA Board of Directors, and have been continuously in progress virtually from TVA's inception. Funds for surveys of major river control and power-producing projects are included in TVA's annual budget requests under the heading "Investigations for future projects." Surveys of transmission system projects are financed from power revenues.

Continuous studies and surveys of potential additions to TVA facilities have been necessitated both by the statutory directives contained in the Tennessee Valley Authority Act, as amended, and by the extraordinary demands for electric power which TVA has been called upon to meet during and since World

War II. Congress, in enacting the Tennessee Valley Authority Act, directed full development of the Tennessee River and its tributaries, and created TVA as a Government corporation with broad authority to undertake the development on which Congress had determined. As passed in 1933, the act included specific authorization for installation of additional units at Wilson Dam and steam plant (TVA Act, sec. 16, 48 Stat. 67, 16 U. S. C. 831o); for construction of Cove Creek (now Norris) Dam (TVA Act, sec. 17, 48 Stat. 67, 16 U. S. C. 831p (note)); and for completion by the President (who delegated the authority to TVA) of "such surveys of and general plans for said Tennessee Basin and adjoining territory as may be useful to the Congress and to the several States in guiding and controlling the extent, sequence, and nature of development that may be equitably and economically advanced through the expenditure of public funds" (TVA Act, sec. 22, 48 Stat. 69, 16 U. S. C. 831u). In 1935, Congress amended the act by, among other changes, adding thereto the present section 4 (j), which provides that TVA:

"Shall have power to construct such dams, and reservoirs, in the Tennessee River and its tributaries, as in conjunction with Wilson Dam, and Norris, Wheeler, and Pickwick Landing Dams, now under construction, will provide a 9-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation on the Tennessee River and its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basins and shall have power to acquire or construct power houses, power structures, transmission lines, navigation projects, and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by transmission lines. The directors of the Authority are hereby directed to report to Congress their recommendations not later than April 1, 1936, for the unified development of the Tennessee River system [48 Stat. 61, as amended by 49 Stat. 1075, 16 U. S. C. 831c (j)]."

In accordance with the last sentence of section 4 (j), TVA undertook a detailed investigation, on the basis of which it prepared and transmitted to the Congress a report entitled "The Unified Development of the Tennessee River System." A copy of this report is enclosed. Since submission of the report, TVA has been continuously engaged in studies of individual projects outlined in the report, and of additional projects required by war and postwar needs for electric power. This continuous program of studies and surveys has been an important underlying reason for TVA's ability to construct projects as needed, on rush schedules and with maximum economy and efficiency.

While the Tennessee Valley Authority Act does not contemplate legislative committee approval of surveys and construction of individual projects, the general plan of development for the Tennessee Valley area and TVA's operations have been reviewed by the appropriate legislative committees, and by Congress as a whole, on numerous occasions. Indeed, improvement of the Tennessee River had been the subject of congressional study, and from time to time of legislation, during a period of more than 100 years prior to TVA's creation. TVA inherited a comprehensive study of the Tennessee River and its tributaries which had been completed by the Corps of Engineers in 1930. This study was the basis of a lengthy "section 308" report to the Congress, published as House Document No. 328, Seventy-first Congress, second session. The report considered several possible plans of development of the Tennessee River system for navigation, flood control, and electric power, and contained recommendations and preliminary cost estimates for various projected dams, power plants, and navigation facilities on both the main river and its tributaries. In 1935, 2 years after TVA came into existence, the Tennessee Valley Authority Act was amended in a number of important respects, including the addition of section 4 (j) (49 Stat. 1075). The amendments were adopted following lengthy hearings before the House Committee on Military Affairs, the legislative committee then having judisdiction over TVA legislation, which covered many aspects of TVA's program (hearings on Tennessee Valley Authority, vols. 1 and 2, 74th Cong., 1st sess.). When TVA completed its report on the unified development of the Tennessee River system required by section 4 (j), the report was referred to the House Committee on Military Affairs and the Senate Committee on Agriculture and Forestry (the Senate legislative committee then having jurisdiction). Neither committee took any exception to the plan of development which the report envisaged. In 1938, following the President's dismissal of Arthur E. Morgan as a member of the TVA Board of Directors, Congress passed a joint resolution (Pub. Res. 83, 75th Cong.) creating a special joint committee to

investigate TVA. The committee made a very extensive investigation of TVA's organization, activities and future plans, and on April 3, 1939, filed a voluminous report which was published as Senate Document No. 56, Seventy-sixth Congress, first session. Shortly thereafter, the entire TVA program again received careful scrutiny, by the legislative committees and by Congress as a whole, as a result of a request by TVA for legislation authorizing it to issue bonds with which to finance acquisition of generating and transmission properties of various private utilities then operating in the Tennessee Valley. This legislation, which established TVA as the sole source of power supply in its service area, was the subject of extensive hearings before the House Committee on Military Affairs (hearings on S. 1796, 76th Cong., 1st sess.), and was enacted as section 15 b and 3 of the Tennessee Valley Authority Act (53 Stat. 16 U. S. C. 831n–2 and 3).

2. How are projects authorized?

As indicated above, full-scale development of the Tennessee River system was authorized by Congress in the Tennessee Valley Authority Act of 1933, and again by implication in the 1939 amendment adding section 15c to the act. Both pieces of legislation (as well as the 1935 amendment to the TVA Act adding sec. 4 (j), and other amendments passed subsequent to 1939) of course received full committee consideration in each House of Congress. Section 4 (j) of the act includes a general authorization for projects designed to promote navigation, flood control, and power, and funds for particular projects have been included in annual appropriation acts.

3. What constitutes an authorized project? What are its limits?

An authorized project, in the sense of one for which there exists substantive statutory authority on which an appropriation may be based, is any project which will carry out the statutory directives contained in section 4 (j) or other applicable sections of the Tennessee Valley Authority Act. An authorized project, in the sense of one which TVA may proceed to construct, is a project for which, in addition, funds have been included in a congressional appropriation. Under section 26 of the TVA Act (48 Stat. 71, as amended by 49 Stat. 1079, 16 U. S. C. 831y) and Title II of the Government Corporations Appropriation Act, 1948 (61 Stat. 572, 16 U. S. C. (Supp. IV) 831th–2), TVA is not authorized to begin construction of any new power project—i. e., a dam or a steam generating station (as distinguished from a minor facility such as a transmission line or substation, which can be financed from power revenues)—unless Congress has first passed an act appropriating funds for such construction. Accordingly, funds for commencing construction of such projects must be sought and expended in accordance with applicable budgetary procedures, which in the case of TVA are those established by the Government Corporation Control Act (59 Stat. 597, 31 U. S. C. 841 et seq.).

The limits of an authorized project are, basically, those indicated in the description of the project contained in TVA's budget request for funds with which to construct it. The budget request describes the nature, purpose, size, and other major features of the project and its estimated cost. Actual costs of TVA's projects have corresponded closely to those contained in the estimates, as indicated by a table which we are enclosing.

4. What latitude for changes and modifications in an authorized project are left to the Authority?

As stated above, the nature of any project is clearly indicated in TVA's budget request. After an appropriation has been made on the basis of such request, the major features of the project are thereby fixed. TVA is responsible for details of construction and, since it does most of its construction by force account, is able to handle design and construction work on an integrated basis. It does not, however, depart from the general plan which has received congressional approval. On one occasion, TVA has modified an approved steam generating plant (the Colbert project) by installing larger generating units than those originally planned, where the budget request contemplated installation of the largest-sized units then obtainable, the larger size units became available after the act making appropriations for the plant had been passed, and the change could be made without involving additional appropriations for the current fiscal year. After deciding on the change, TVA addressed letters to the chairmen of the Appropriations Committees of both Houses advising them of its plans.

5. Who approves such modifications? The General Manager? The Chairman? The Board of Directors? The President?

Under TVA's established internal procedure, after funds for a project have been included in an appropriation, a project authorization is prepared and presented to the TVA Board for approval. The project authorization is based on a planning report, embodying details of planned construction. If it becomes apparent during the course of construction that the total cost, duration of the construction period, or some similar factor will differ importantly from the forecasts on which the original project authorization was based, the new development is brought to the attention of the Board of Directors for review and for whatever changes the Board may consider necessary through an amendment to the original project authorization.

6. Under what circumstances is it considered necessary to bring proposed modification of an authorized project to the attention of Congress?

The question of a modification of a major feature of an approved project has seldom arisen. The change in size of generating units at Colbert steam plant is an example of such a modification which was called to Congress' attention.

7. In the opinion of the agency, what additional steps should be taken in the authorization procedures?

None.

In our judgment, TVA's record of speedy construction, low costs, and close correspondence of actual to estimated costs would never have been possible, and could not continue in the future, without the relatively simple procedure now in effect. The present procedure makes it possible for TVA to investigate potential projects in advance of needs, to recommend the best and most economical projects as the need for them arises, to obtain funds for the them with a minimum of delay, and to build them on the fastest possible schedules and at the lowest posible cost. At the same time, TVA, because it can do these things, is placed under maximum accountability to Congress for results. So long as TVA is in a position to make investigations and surveys as they are needed and to proceed with actual construction within a relatively short time after submitting cost estimates, it must accept and always has accepted full responsibility for completing projects efficiently, on schedule, and at costs corresponding closely to cost estimates.

The present procedure, moreover, is particularly well adapted to fulfillment by TVA of its obligations as the sole source of electric power supply within its service area of 80,000 square miles. TVA, as power supplier for the area, must provide electric power in the quantities and at the times it is needed by people and businesses, and, during and since World War II, by Atomic Energy Commission plants and other vitally important defense installations. In discharging these obligations, TVA has time and again had to recommend projects on short notice, and to complete them on record scedules. During the early part of World War II, when TVA was called upon to supply greatly increased amounts of power to permit a vast expansion in production of aluminum and other defense materials, it set a construction record by closing Cherokee Dam in 16 months and 4 days after commencement of construction, and placing the first generating unit on the line 4½ months after closure. It then broke that record by closing Douglas Dam in 12 months and 17 days after commencement of construction, and putting the first unit on the line 30 days after closure.

In the present defense emergency, TVA is again being called upon for the same kind of performance. For example, late in 1949, the Atomic Energy Commission decided, subject to congressional approval, to expand greatly its facilities at Oak Ridge. It notified TVA that the projected expansion would require an increase in power to be supplied by TVA to Oak Ridge of 340,000 kilowatts, beginning with small amounts in September 1951 and increasing to the full requirements in July 1952. To meet these requirements, TVA proposed construction of a new steam plant at Widows Creek, Ala., and addition of a fourth generating unit at its Johnsonville, Tenn., plant, together with related transmission system facilities. Funds for both the AEC and TVA expansions were requested in supplemental appropriation estimates sent by the President to Congress on January 25, 1950 (H. Doc. 456, 81st Cong., 2d sess.). Funds based on these estimates were provided in the Urgent Deficiency Appropriation Act, 1950, which became law on March 27, 1950 (Public Law 468, 81st Cong.). Initial operation of the Widows Creek steam plant is scheduled for 1952. Later in

1950, the AEC decided upon construction of a new facility near Paducah, Ky., and asked originally that TVA supply all of the million kilowatts of electric power needed for its operation. To meet this request, TVA, after a quick investigation of the relative economies of available steam-plant sites, proposed to construct a new steam plant of six generating units adjacent to the site of the projected AEC installation, and to add two more units at its Johnsonville plant. At the same time, to meet growing power demands from other sources, it proposed to construct another new steam plant at the other end of its system near Kingston, Tenn. Funds for both plants were included in a request for supplemental appropriations sent by the President to Congress on December 1, 1950 (H. Doc. 727, 81st Cong., 2d sess.). Hearings were held on the request by a subcommittee of the House Appropriations Committee on December 7, 1950. A few days after the hearings, a drastic change in TVA plans became necessary when AEC decided to secure one-half the power required for its new installation from Electric Energy, Inc., an organization formed by a group of private utilities, with TVA supplying the other half. Further hearings were held by the House Appropriations subcommittee on December 14, 1950, to consider the situation growing out of this change in plans; at these hearings, TVA suggested a modified steam-plant expansion program, involving a decrease of $12,000,000 in the funds requested by the President, to take account of the reduction in required new generating capacity below that originally contemplated. Funds for the revised program were included in the Second Supplemental Appropriation Act, 1951, which became law on January 6, 1951 (Public Law 911, 81st Cong.). Initial operation of the new Shawnee steam plant near Paducah is scheduled for 1952, and of the new Kingston steam plant for 1953.

TVA's record of speedy construction, like the cost record reflected in the enclosed table giving estimated and actual project costs, has been possible, in our judgment, only because of the existing authorization procedure. This procedure has enabled TVA to investigate possible future projects in advance of the need for their construction; to refine and finalize the results of these investigations quickly when the time has come to recommend actual construction; to obtain funds for construction with a minimum of delay; and to proceed with and complete construction on the record-breaking schedules which the events of the past decade have required. Under the existing procedure, Congress, because of the unique assignment given TVA under the TVA Act and, after the 1939 amendment, as the sole power supplier in a region vital to the national defense, has accorded to TVA a considerable degree of flexibility in carrying out its construction program. For that very reason, Congress has been justified in expecting from TVA, and we think has received, an outstanding record of efficient and economical performance.

8. What steps could be eliminated from the authorization without impairment?

None.

While the TVA Act authorizes appropriations for all projects which will advance the purposes of the act, TVA, in its annual budget requests and appearances before the appropriations committees, gives full and regular accountings concerning the status of its program and its future plans. The applicable procedure is that which Congress, following considerable study by the House Committee on Expenditures in the Executive Departments and the Senate Committee on Banking and Currency, prescribed for TVA, and for Government corporations generally, by the Government Corporation Control Act (59 Stat. 597, 31 U. S. C. 841 et seq.). This act provides for submission of annual business-type budgets by Government corporations, and for annual audits of their activities by the General Accounting Office in accordance with principles applicable to commercial corporate transactions. We believe this procedure keeps Congress fully informed concerning TVA's activities and the manner in which it is doing its job, and that none of the steps involved should be eliminated.

9. What data are furnished the authorizing committee or the Appropriations Committee subsequent to the authorization of a project?

As indicated in the answer to the preceding question, TVA, in its budget presentations and appearances before the Appropriations Committees, furnishes each year what amounts to a general report on the status of its construction work and of its program as a whole. Requests for detailed information on particular phases of the program invariably arise during the Appropriations Committee hearings. The table comparing estimated and actual construction

costs, mentioned in our response to questions 3 and 7 and sent herewith as an enclosure, was compiled in accordance with a request made during the Senate Appropriations Committee hearings on the Independent Offices Appropriation Act, 1951, and appears (as compiled before revisions to reflect actual rather than estimated costs of two projects not then fully completed) at page 1067 of such hearings.

10. What reports are rendered within the executive branch to facilitate control by officers exercising supervision over the TVA?

TVA's annual budget requests to, and appearances before, the Bureau of the Budget constitute, similarly, an annual report to the Bureau concerning the status of TVA's program. In addition, TVA regularly furnishes to the Bureau copies of planning reports immediately upon their completion.

11. Provide the subcommittee with a copy of any standard regulations prescribing policies and procedures concerning the authorization of projects

Copies of TVA's applicable administrative code provisions and interdepartmental instructions, together with copies of a typical planning report and project authorization, are enclosed herewith.[1]

If you wish any further information, we shall of course be glad to provide it.

Sincerely yours,

JOHN OLIVER, *General Manager.*

[1] Not printed.

Tennessee Valley Authority—Comparison of estimates with actual costs, all major TVA constructed projects

	Final cost from published technical reports		Estimates		Construction started	Initial power	Date of House committee hearings [1]	Source of estimate
	Amount	Number of generators	Amount	Number of generators				
Norris	$30,508,024	2	[2] $36,025,230	2	Oct. 10, 1933	July 28, 1936	.....	TVA formal report to Congress, March 1936.
Wheeler	29,294,720	2	32,116,537	2	Nov. 21, 1933	Nov. 9, 1936	.....	Do.
Pickwick	29,701,267	2	32,529,685	2	Mar. 8, 1935	June 29, 1938	.....	Do.
Hiwassee	15,922,637	1	15,250,000	.....	July 15, 1936	May 21, 1940	.....	Do.
Guntersville	31,098,760	3	29,500,000	.....	Dec. 4, 1935	Aug. 1, 1939	.....	Do.
Chickamauga	33,730,996	3	31,650,000	.....	Jan. 13, 1936	Mar. 4, 1940	.....	Do.
Kentucky	116,302,296	5	112,000,000	6	July 1, 1938	Sept. 14, 1944	Dec. 13, 1937	Independent offices appropriation, fiscal year 1939, p. 919.
Watts Bar	32,976,647	5	35,000,000	3	July 1, 1939	Feb. 11, 1942	Jan. 24, 1939	Independent offices appropriation, fiscal year 1940, p. 1720.
Fort Loudoun	31,940,739	2	28,500,000	2	July 8, 1940	Nov. 9, 1943	Dec. 8, 1939	Independent offices appropriation, fiscal year 1941, p. 1672.
Cherokee	29,765,267	2	34,500,000	3	Aug. 1, 1940	Apr. 16, 1942	July 9, 1940	Deficiency, fiscal year 1941, p. 2.
Douglas	39,496,985	2	30,500,000	2	Feb. 2, 1942	Mar. 21, 1943	Oct. 1, 1941	Second supplemental, fiscal year 1942, p. 17.
Fontana	69,043,688	2	48,000,000	3	Jan. 1, 1942	Jan. 20, 1945	....do.....	Do.
Chatuge	7,036,589	.....	10,000,000	.....	July 17, 1941	Feb. 12, 1942 [3]	June 2, 1941	First supplemental, fiscal year 1942, p. 11.
Nottely	5,379,709	.....			....do.....	Jan. 24, 1942 [3]	....do.....	Do.
Ocoee No. 3	7,988,050	1	6,600,000	1	....do.....	Apr. 30, 1943	....do.....	Do.
Apalachia	22,558,532	2	20,000,000	2	....do.....	Sept. 22, 1943	....do.....	Do.
Watts Bar steam	18,866,876	4	[4] 18,200,000	4	Aug. 8, 1940	Feb. 15, 1942	July 9, 1940	Independent offices appropriation, fiscal year 1943, p. 850.
Watauga [5]	31,541,625	2	28,900,000	2	July 22, 1946	Aug. 30, 1949	May 9, 1946	Government corporations, fiscal year 1947, p. 927.
South Holston [6]	30,600,000	1	30,650,000	1	Aug. 4, 1947	Feb. —, 1951	Apr. 15, 1947	Government corporations, fiscal year 1948, p. 31.
Grand total	616,753,405	41	579,921,452	35				

[1] Incident to request for funds to begin construction.
[2] Includes about $5,000,000 for Norris Village, etc.
[3] Closure. No generating equipment installed.
[4] Initial appropriation was for a 2-unit plant; this is the initial estimate submitted for the 4-unit plant.
[5] Cost on books, June 30, 1951.
[6] Present estimates.

NOTE.—The total cost column includes 6 more generating units than the total estimate column. Adding 6 units to the estimates at an average price of $3,000,000 would give total estimates of approximately $598,000,000, total costs approximately $616,750,000; overrun equals $18,750,000, or 3.1 percent. All costs and estimates are exclusive of switchyards.

Mr. CLAPP. The Tennessee River system, as the committee knows, flows through parts of seven States. The Tennessee River itself empties into the Ohio River near Paducah, Ky. It rises in the mountain areas of southwest Virginia, north and west North Carolina, and northwest Georgia. It cuts completely across east Tennessee, which receives the major tributaries of the Tennessee, the Clinch, the Holston, the French Broad, the Hiwassee, the Little Tennessee, and the Ocoee Rivers. Then it cuts across north Alabama and makes an arc into northeast Mississippi and turns at an almost complete right angle and goes north through west Tennessee and west Kentucky into the Ohio.

There is a great deal of history written about the early attention of the Federal Government to the Tennessee River. President Monroe was interested in it. The Congress of that day became interested in its navigation improvement prospects, and over the years in the record of history that I shall not intrude upon the committee because I know you are aware of it, there are reported many piecemeal attempts to develop the Tennessee River, primarily in the early days for the purpose of navigation.

The situation at the time the Tennessee Valley Authority was created in 1933 briefly was this: The Wilson Dam at Muscle Shoals in north Alabama, to which I am pointing, had been built. It was started during the First World War and finished about 1925. The Hales Bar Dam had been built on the main river just below Chattanooga by a private power company and there were some minor navigation facilities in various parts of the river. At the time the Tennessee Valley Authority Act was passed the Army engineers were engaged in building a lock at the site of the present Wheeler Dam, which is upstream from Wilson Dam, as a part of an authorization made by the Congress in 1930. In the meantime the Army engineers through a series of surveys authorized by the Congress had surveyed up and down the whole river system and had put forward a mixture of plans by which the Tennessee River might be developed. Those plans were incorporated and published in House Document No. 328.

The Tennessee Valley Authority Act settled an important argument as to how the Tennessee River should be developed. The basic argument that had been going on among engineers was whether the main stream of the river should be developed primarily for navigation without regard to flood control and with little regard, or none, to power. There was an argument among engineers as to how the job should be done, that is, whether through a series of low dams many in number, or a series of higher dams fewer in number.

There was another school of thought that leaned toward a program of multiple-purpose structures on the whole river system that would provide flood control and create a navigable channel and also get as much power as possible from the fall of the river.

Congress, in the Tennessee Valley Authority Act, resolved that argument in favor of a system of multiple-purpose high dams on the tributaries and on the main stream that would produce the maximum amount of flood control; the maximum useful navigation channel from Paducah, at the mouth of the river, to Knoxville, the head of navigation, where the French Broad and the Holston Rivers come together to form the Tennessee; and the maximum amount of hydroelectricity

that could be generated from that system of multiple-purpose structures without detriment to or sacrifice of flood control and navigation benefits.

Therefore, when the Tennessee Valley Authority Act was passed and the Tennessee Valley Authority itself was established, the engineering argument as to how the river was to be developed for its basic purposes was settled in the law. Our assignment as a Tennessee Valley Authority was to build a system of high, multiple-purpose dams on the Tennessee River system to get the most flood control within the Tennessee Valley and for the lower Ohio and the lower Mississippi; to create a navigable channel of 9 feet in depth from Paducah to Knoxville, which meant locks in all of the main river structures, and to get as much hydroelectricity from that system as our engineers possibly could without sacrificing any flood control of navigation.

Shortly after the Tennessee Valley Authority was established we began to build. The original Board of Directors of the Tennessee Valley Authority had in my judgment great wisdom and vision when they saw that the way to get economy and to achieve the purposes they were to be held accountable for was to develop an organization of engineers, of administrators and managers who could plan these structures, locate them on the river, recruit the forces to build them and actually supervise the construction, and then take over their operation to make sure that they were operated in accord with the purposes for which they were built. As a matter of fact, the result is this: The Tennessee Valley Authority today can report to this committee that the broad outlines of its fundamental mandate from the Congress to achieve maximum flood control, a navigable channel and power from the Tennessee River system has in the large been accomplished. It has been accomplished in the space of less than 20 years. It has been accomplished, I think, with a minimum of engineering argument as to fundamental purpose or methods by which those purposes could be achieved.

Moreover, we can report that the dams as planned, as designed, as built, and as operated, achieve substantial flood control. They have made navigation on the Tennessee River a reality that grows in volume every year, and certainly they have produced tremendous quantities of electricity which is today contributing to the region's development.

Just a few facts and figures at this point. We have built 18 dams. We bought some. We worked out agreements with those who owned some additional dams on one of the small tributaries whereby their operation is coordinated with the whole system, so that today there are on the Tennessee River and its tributaries some 28 dams that comprise a single unified system of water control in the Tennessee River system. We still have two dams under construction.

These dams provide nearly 12,000,000 acre-feet of flood control. Four million acre-feet of that amount are right at the mouth of the Tennessee River by means of the Kentucky Dam, which backs up a lake 184 miles long across west Kentucky and across Tennessee down to the State line of Mississippi and Tennessee. Those 4,000,000 acre-feet of flood control in the Kentucky Reservoir are strategic in their location for their purpose, because they are close to the lower Ohio and the Cairo area on the Mississippi. Flow from the Tennessee,

therefore, can be controlled rather accurately in its effects on the lower reaches of the Ohio and on down the Mississippi.

I should add with respect to the flood control that our studies show that that flood control on the Tennessee system has an annual value, or rather the benefits from preventing floods have an annual value of $11,000,000 divided about half and half between the Tennessee Valley and the areas outside of the Tennessee Valley on the lower Ohio and lower Mississippi.

As an illustration of the strategic value of this flood control for the lower Ohio and the lower Mississippi, I would like to point out that by the operation of our reservoirs on the Tennessee River we can for all practical purposes shut off the flow of the Tennessee River into the Ohio, and thereby keep the waters of the Tennessee River out of the floodwaters of the Ohio, and let the crest of the Ohio pass before we release the Tennessee River water into the Ohio. That kind of operation can reduce the flood crest on the lower Ohio and lower Mississippi in amounts ranging from 2½ to 3 feet down to a matter of inches as you go on further down the river.

Back in January 1950, for example, when the Army engineers were coping with a serious flood in the New Madrid area on the Mississippi River, they had issued a warning to some 12,000 people in the agricultural area back of the New Madrid section that if the crest got higher on the bank or on the levee it would be necessary to dynamite a fuse plug that was prepared for that purpose and thereby flood the acres on which these 12,000 people lived, in order to release the pressure on the levees elsewhere on the main stream.

TVA's operation at Kentucky Dam, shutting down the flow of the Tennessee River into the Ohio, reduced the crest sufficiently so that it was not necessary to blast that levee, the 12,000 people did not need to evacuate; the land on which they lived and worked and earned their living was not flooded.

Whether it is a matter of feet or a matter of inches, the important thing in these flood-control matters is that the last few inches of the dikes and levees not be overtopped. Even in 1937 when the Tennessee Valley Authority had put one of its storage dams on the tributaries in operation, namely, the Norris Dam, we were able in that severe flood to make a difference of several inches at Cairo more than 650 miles downstream. Those inches at Cairo meant the difference between topping the levees and not topping the levees.

At the time the Tennessee Valley Authority was created there was some amusement and cynicism, I suspect, with regard to the navigation provisions in the Tennessee Valley Authority Act. The Tennessee River had always been important, in some respects, as a navigable stream. It was navigable in parts, and when it was in flood it was deep enough to float a good-sized craft. Then in the dry summer months there might be hardly a trickle and in some spots it was not navigable even for rowboats.

In 1933 and prior to that time there had been river traffic. Most of it was sand and gravel and rough materials, carried in short-haul operations. Actually the records show that in 1933, 33,000,000 ton-miles of freight moved on the Tennessee River system. Very little of it could move from the mouth of river to the head of navigation at Knoxville because there were many stretches along the river that

were not navigable for boats of much draft. With traffic as small as that there was some thought that the navigation feature of the Tennessee Valley Authority plan was more a disguise to make the constitutionality of the whole proposition a little more palatable. There were many who thought that nothing would come of the navigation features on the Tennessee system.

Well, the record has proved otherwise. By 1945 there were more than 250,000,000 ton-miles of traffic on the Tennessee system. That is an increase of more than seven times since 1933. In 1950 there were almost 600,000,000 ton-miles of traffic on the Tennessee system, more than double what it was in 1945.

I think more important perhaps than the volume of navigation and traffic increase on the Tennessee River is the change that has taken place in the kind of materials and commodities that are barged through that system. Coal moves in great quantities on the Tennessee now. It can go up into the Middle West from fields that were otherwise not accessible to Midwest markets, and it can come down from western Kentucky into the Tennessee Valley by river.

Wheat and corn in substantial quantities are moving from Nebraska and the Missouri Valley into the Tennessee Valley. That has brought some interesting changes in the economy, or helped to bring some interesting changes in the economy of the Tennessee Valley.

One of the most dramatic items of freight transportation on the Tennessee River is the finished automobiles that come out of the factories in Michigan and are put on high three-decked barges and tows that originate at Evansville, Ind., and go down the Ohio and then into the Tennessee. They are huge tows with several hundred automobiles in one shipment. They are unloaded at Guntersville, Ala., which is the southernmost port on the Tennessee River. Those automobiles are then transferred from barges to big trailer trucks and hauled off to points of distribution all through the Southeast.

During the war instead of automobiles, ambulances and trucks and tractors were being shipped to Army and military depots all through the Southeast.

Oil and gasoline move in tremendous quantities on the Tennessee, coming in from refineries and distribution points all along the Mississippi, up the Ohio, up the Tennessee into north Alabama ports and Chattanooga, where the oil is redistributed.

Fertilizer is moving out of the Tennessee Valley into the Middle West through Minneapolis and Winona, Minn., and Prairie du Chien in Wisconsin.

Iron and steel come from Pittsburgh, down the Ohio River, up the Tennessee all the way to the head of navigation at Knoxville.

The change in the character of the materials shipped on the Tennessee River demonstrates that when you make a stream navigable in an area that has possibilities for a diverse development, that river will become an important part of the economic structure of that region and begin to tie it into the specialties of its neighboring regions. The economic affinities between the Southeast and Middle West are much greater today by virtue of the existence of this navigation channel than they were before the Tennessee was navigable.

When you find grain elevators piercing the skyline on the Tennessee River in north Alabama storing grain that comes from the Middle West, then you are really beginning to tie the agricultural economy of the two great regions together in an important way, because grain can be grown in the Middle West and in the prairie section much more efficiently and economically than it can in the Southeast, where we do not have the large prairie expanses, and where agriculture must be more intensive. Therefore cheap navigation and cheap transportation of grain to supplement the growing pasture economy of the Southeast and relieve the Southeast of the necessity of growing or devoting too many of its acres to growing grain is helping an expanding livestock economy in the Southeast. Later on I want to go into that in more detail, but I wanted to relate the navigation feature of this whole plan to some of its economic byproducts.

Frequently the byproducts become more important than the method by which those byproducts were created.

Mr. DAVIS. Pardon me, Mr. Clapp. Mr. Dondero is very much interested in the movement of automobiles from the North by barge load coming down through the Ohio and up the Tennessee.

Mr. CLAPP. That is right, Mr. Davis. The usual point of origin for the river is at Evansville, Ind. If you have never seen one of those automobile barges, it is quite a sight.

Mr. DAVIS. My colleague, Mr. Dondero, has seen it on the Mississippi. Of course, he is intensely interested because he comes from the very heart of the automobile industry, where he makes it possible for us to ride on rubber. But I want to emphasize this point. There is a tremendous movement of automobiles all the way up to Knoxville, which gives cheaper transportation and, of course, convenience to the ultimate customer as well as business to the retail outlet.

Mr. CLAPP. That is an excellent point, Mr. Davis, and I might add this: That every bargeload of automobiles that goes on the river not only helps it to reach the consumer at less cost in the handling, but it also helps to relieve some of the terrific congestion on our highways and some of the congestion on our freight lines.

Mr. DONDERO. Knowing the amount of money that Congressman Davis and his constituents have in Memphis I didn't think many of those cars ever got past Memphis or got down as far as that.

Mr. CLAPP. Memphis is very generous, Mr. Dondero, in sharing its wealth with the rest of the Southeast. Before going to the power features of this system, I would like to describe the construction schedule and, as it were, make a progress report to this committee about our construction program.

Shortly after the Tennessee Valley Authority was established the Congress in line with the basic mandate incorporated in the law authorizing the Tennessee Valley Authority to build a system of dams for multiple purposes on the Tennessee River, asked the Tennessee Valley Authority to report by 1936 what its comprehensive plan for the development of the Tennessee River was to be. Congress wanted more detail. In about 9 or 10 months from the time the Congress asked it to make such a report the Tennessee Valley Authority Board filed in March of 1936 this report I hold here which is, in the history of the Tennessee Valley Authority, basic document called The Unified Development of the Tennessee River System. This report laid out at

that time a proposed construction schedule covering a number of projects which the Board then thought would be needed to carry out the development of the river.

I have here a chart that lists the projects that were recomended in this report in 1936. The projects from Wheeler to the raising of Wilson Dam as shown on this chart are the ones that were included way back in 1936 in this Unified Development report.

In this 1936 report our engineers, with the approval of the Board of the TVA, outlined a proposed construction schedule that gave the approximate dates these construction projects should begin and an estimate as to when they would be finished. It included as well some estimates of their cost. On this chart the red shows the schedules as they were projected in the March 1936 Unified Development report. The black bar shows what actually happened.

To summarize, I think it is clear from examination of the chart that with few exceptions the program proceeded as contemplated in the report of 1936. There are two exceptions which relate to Fontana Dam and to the raising of Hales Bar Dam. We had proposed in the 1936 report that work on Fontana would begin in 1937. Fontana was viewed as a very important tributary storage flood-control and power project to contribute a great deal to the flood-control system as a whole and to the power output. It was to be built on the Little Tennessee River, which is a tributary of the Tennessee. The Little Tennessee River had prior to the time that the Tennessee Valley Authority was set up been developed in part by the Aluminum Co. of America. The Fontana site was located right in the middle of the Alcoa system of dams. Some Alcoa dams were below the Fontana site, and some Alcoa dams were above the Fontana site.

Preparing the way, therefore, for building the Fontana Dam involved a very complicated and protracted negotiation with the Aluminum Co. of America to make sure that when the dam was completed there would be a way of integrating the operation of the Aluminum Co. of America projects above and below Fontana with the operation of the Tennessee Valley Authority's Fontana project. Those negotiations postponed the start of the project, and it was not until 1942, after the war had started, or about the time the war had started, that Fontana was begun.

You will notice also that it was completed in less time that we had estimated it would be. I will say more about that in a moment.

The other project that did not proceed about as we proposed back in 1936 was the raising of the Hales Bar Dam. The reason for that was because we did not see fit to urge that improvement in the middle of a war, so it was postponed. It has now been done in large part and has made of that dam, which we bought from Mr. Willkie a structure that can take its place with equality in the projects that have since been built on the Tennessee River.

We proposed this schedule of construction. We carried it out pretty much as we planned it. The vision and the planning that went into the judgments of the 1936 report have now been put on the river in the form of concrete and steel and are doing the things which this report of 1936 said they would do.

On the bottom part of this chart you will notice a series of projects that seemed to come and did come all at once. Most of them were

started or built during the war. All of them had been envisioned in the 1936 report, though perhaps not in the particularity with which they later took form and shape. They were in the Tennessee Valley Authority's future plans, but it was assumed that they would be spread over a longer period of time. With the advent of hostilities abroad and the entry of the United States into the war, the demand for power accelerated the pace of these projects and at one time during this period of 1942 to 1943 we had a dozen major projects in the construction stage at one time. We had more than 40,000 employees at work; that is, employees of TVA, building these dams and power structures.

I would like now to show the committee another set of estimates that we made with respect to those same projects. A combination of a red bar and black bar relates to a single project. The red bar shows the cost we estimated for the construction of these projects at the time we first discussed the project with the Congress in seeking appropriations for it. The black bar shows the final cost of completion, that is, the cost of the job done.

For the total as a whole our estimates predicted a total cost for these projects of $597,000,000. The total actual cost was $616,000,000, or an over-run in our estimates on a program in excess of a half a billion dollars over a period of 18 years—an over-run of 3.1 percent.

Mr. DAVIS. I think that is very significant.

Mr. MACK. Does that include both the dams and the power lines?

Mr. CLAPP. That includes both the dams and the powerhouses. The installation of units, yes, but not the transmission lines and substations, and other things that carry the power from the dams to the distribution centers. The record on those items would be pretty close to that kind of a margin. Actually it might even make a better showing because the projects are in smaller dimensions for transmission and substations. Consequently they are being estimated and added to the program closer to or in a shorter period of time between the time the estimate is made and the time the job is actually completed.

Mr. SMITH. Mr. Clapp, what proportion of that construction was done since the war?

Mr. CLAPP. A very small portion of it has been done since the war, but I might say that in the construction work that we now are doing and have been doing since the war the major project is the new Johnsonville steam plant. We now have four units of that new Johnsonville steam plant completed and on the line. We will complete that plant within the estimates we made in 1947 and 1948.

Mr. SMITH. That is the point I wanted to bring out about what the comparison between the estimates and the actual costs was during this time when there has been very little stability in prices. Of course, there was some stability during the war.

Mr. CLAPP. That is right. During the war one could make fairly good price estimates, nevertheless our main difficulty on estimates occurred during the war, and for a reason which I would like to point out. We did not hit our estimates on Fontana Dam. I mentioned a moment ago that our original proposal for Fontana had in mind a longer construction schedule than we actually used. We shortened the schedule and used a lot of overtime in order to get that dam finished to make its power available to the big defense developments that were taking place in the valley. Consequently we exceeded our estimate by a large amount on Fontana.

The same is true with respect to Douglas Dam. Douglas Dam was proposed in the summer of 1941. Considerable debate developed about it. Our estimates were based on the supposition that we would get started in the fall months on what was to be an emergency schedule. Actually we did not get the initial appropriations in time to begin construction until the middle of the winter, which is the worst time to begin this kind of a construction job.

Nevertheless, we still were trying to hold to the original completion date that we had estimated 6 months before. We did make that completion date. We set world records on that job and finished it in 13 months. That was a project of 100,000 kilowatts of power, substantial flood control, and an extremely difficult construction program because of the seasonal spacing of the job. We exceeded our cost estimate on that in order to complete our schedule.

The task of living within the estimates during the war was easier so far as the stability of prices was concerned, but more difficult because of the need for shortening schedules which meant a lot of overtime, and using methods more expensive than we would otherwise adopt.

Mr. DONDERO. Are we making any money?

Mr. CLAPP. Mr. Dondero, the power system of the Tennessee Valley Authority, which I want to describe in more detail, has averaged since the beginning, since 1933, including the years in which we could not reach our market because of litigation—it has averaged better than 4-percent return on the average power investment.

Mr. DONDERO. How much have we invested?

Mr. CLAPP. The total investment in service now, that is, in 1951, was approximately $495,000,000.

Mr. DONDERO. What do you do with the income that you receive?

Mr. CLAPP. The income we receive?

Mr. DONDERO. The purpose of the question is, Is it covered into the Treasury of the United States or is it put into a revolving fund of the Tennessee Valley Authority?

Mr. CLAPP. The latter is the case with these modifications, Mr. Dondero. All revenues and receipts from our power system are available to the Tennessee Valley Authority for the operation of the system and for power construction within the limits of the authorizations of our laws, provided that we also make payments into the Treasury sufficient to return the appropriated funds invested in the power system within a period of 40 years.

Mr. DONDERO. That is, your period of amortization is 40 years?

Mr. CLAPP. The period of pay-back to the Treasury of the United States is 40 years.

Mr. DONDERO. Do you base the rates of power and other benefits upon that 40-year period?

Mr. CLAPP. The rates are sufficient to accommodate that kind of a pay-back. Yes.

Mr. DONDERO. If you raised your rates of course you would amortize sooner.

Mr. CLAPP. Assuming that our costs and our loads would stay the same. The record of the Tennessee Valley Authority in earnings and rate of return in the last 4 or 5 years is much better than that average for the total period. It has exceeded 5 percent in some years. We think that is a little high.

Mr. DONDERO. What part of this entire development do you think could have been done by private enterprise if they had been given the opportunity?

Mr. CLAPP. I do not believe private enterprise would have done it. Now, whether they could have done it is a difficult question to answer, for these reasons: I do not know how a private company could have justified an expenditure over and above that required for power development in order to get navigation and flood control in these same structures.

Certainly it would not be fair to have charged investment for flood control and navigation into the power base and make the power consumers pay for it.

On the other hand, if a private power company or a group of them had undertaken, as the Army engineers thought might happen in the early thirties, to build power structures on that river minus flood-control and navigation features, or even with navigation features, a great opportunity to have contributed substantially to flood control on the lower Ohio and lower Mississippi would have been lost for a long time to come.

Mr. DONDERO. From your studies do you think that the amount of money allocated to the costs of navigation and flood control is justifying itself from the standpoint of savings?

Mr. CLAPP. Indeed it is.

Mr. DONDERO. Either in rates or the saving of property?

Mr. CLAPP. In flood control the annual benefits are estimated in excess of $11,000,000. That should be related to an annual cost of considerably less than that. I would like to give you the exact figure if I may.

Mr. DONDERO. I have never had any quarrel with the development of power on our water resources. I think we must do it because the demand for power is so great. My quarrel arises when you get into the field of distributing power, which could be done by private enterprise. That is one of my objections.

Mr. CLAPP. I would like to comment on that point in a moment, after I have given you this figure.

Mr. DONDERO. Certainly. I did not mean to interpose that question ahead of the others.

Mr. CLAPP. The annual flood-control costs in the Tennessee Valley Authority system, based on 1951 expenditures for operation and maintenance, including depreciation and interest calculations, would be $5,500,000. So, if you want to think of it in terms of ratio of annual cost to annual benefits you get a ratio of 2 to 1.

Mr. SMITH. On that same subject, Mr. Clapp, what does that $11,000,000 of benefits include? Are you including the benefits on the lower Mississippi and the Ohio?

Mr. CLAPP. Yes, sir. It splits about 50–50. It is calculated on an extremely conservative basis of damage that would otherwise occur on the average, which is prevented by virtue of this operation.

Mr. SMITH. For instance, the new situation in Missouri on the New Madrid spillway that you mentioned awhile ago, to which you attribute the success achieved in not having to open the fuze plug. How much benefit do you attribute to that?

Mr. CLAPP. Actually I do not have a figure for that particular operation, but the——

Mr. SMITH. Is that included in the average?

Mr. CLAPP. That is included in the average. That type of operation is included in the average and we get at it this way: The annual benefits from the Tennessee Valley Authority flood-control system attributable to the lower Ohio and lower Mississippi are $5,800,000. Of that our studies and investigations attribute about a million and a quarter of the benefits to railroads, highways, crops, and other property; about $120,000 a year to reduced levee maintenance; and $4,500,000 to increased land values.

The New Madrid operation I am sure would be one of those operations that figures in this increased land value. If you can save some 6,000,000 acres, which is the total acreage we estimate can be saved from flooding on the lower Mississippi because of Tennessee Valley Authority operations, then obviously you add something to their value.

Mr. SMITH. Could you furnish for this record an estimate of maximum benefits that the operation of your flood-control system, especially in relation to Kentucky Dam, gives the Ohio and the lower Mississippi in reduced flood levels as it goes down the river?

Mr. CLAPP. Yes.

Mr. SMITH. So that we could have some idea of the effect, and what the effect is, and how far it goes.

Mr. CLAPP. Yes. I can say to you right at this moment, and I will supplement it with more detail, that the effect ranges all the way from 2½ to 3 feet at Cairo down to less than 6 inches as far down as the mouth of the Red.

Our engineers would be prompt to qualify what I have said by pointing out that those figures would apply variously, depending on the nature of the storm, the progress of the crest, and where the floods originate, and exactly how the operation is conducted, but that is a safe generalization.

Mr. MAGEE. Mr. Clapp, at that point I would like to ask this question: This never occurred to me before, but I assume you have your own engineers?

Mr. CLAPP. That is right, sir.

Mr. MAGEE. In this over-all program do you consult with the Army engineers on any of this whatever?

Mr. CLAPP. Yes; we do. I might say on that point that House Document 328, which included the surveys of the Army engineers prior to the creation of the Tennessee Valley Authority, was an invaluable source of ideas, data, measurements, with respect to stream flow, prospective sites and the like. Because of those surveys TVA was able to proceed more quickly than it would have been possible if they had not been available.

Mr. MAGEE. When they do have a flood on the Ohio or the Mississippi I suppose you might at times consult with them about handling the water in your system?

Mr. CLAPP. It is much more precise than that, sir. The Tennessee Valley Authority and the Army engineers, through their district offices, are in periodic communication on water problems. When there is the slightest intimation that there is going to be a flood, even of small dimensions, our communications get more frequent.

Actually, the Tennessee Valley Authority under the Flood Control Act of 1944, I believe it is, is expected to regulate the flow of the

Tennessee at its mouth in time of flood on the Ohio in accordance with understandings worked out with the Army engineers. Therefore, the Army engineers being in charge of making flood and crest estimates on the Ohio and the Mississippi can look to us to regulate the outflow of the Tennessee at Kentucky Dam to fit best the flood-crest conditions on the lower Ohio.

In moments of that kind, or during those periods, our engineers and the Army engineers are on constant communication.

Mr. MAGEE. Your relationships have been very pleasant and there has been no friction?

Mr. CLAPP. That is correct. As you get operating people working under agreements recognizing the purpose which these facilities are to serve and identifying the points at which coordination will be achieved, then the occasions for friction are few.

I might say this: That if the Army engineers were to suppose that they knew more about how to handle the release of water in Norris Dam or Hiwassee Dam, or Chickamauga Dam in order to get better control at the mouth of the Tennessee we would be quick to suggest that they leave that to us. I say that because our engineers know more than any other group of engineers in the world, as they should, about the characteristics of Tennessee Valley storms, the way to interpret weather reports, the relation of weather to flow and release from our dams, and the precise coordination of all of these storage dams into a single unit.

Therefore any interference from outside theorists as to how that should be done better would be pushed to one side.

The important point that I want to make clear is that coordination between the Army engineers and the Tennessee Valley Authority in flood-control matters on this river system works well because the point of coordination is at the mouth of our system.

Mr. Chairman, would you like me to proceed, or what is your wish?

Mr. JONES. I suppose we had better conclude the hearing now, Mr. Clapp, until tomorrow because we are expecting a roll call at any moment. I believe you said you were agreeable to come back tomorrow?

Mr. CLAPP. Yes, indeed. I could explain that tomorrow I would like to describe the power features of the river-control system and then go into the programs that TVA takes part in outside of the river system on the land and watershed of Tennessee.

Mr. DAVIS. Mr. Chairman, it is so refreshing to have a man of Mr. Clapp's ability and thoroughness before this committee that I want to express my appreciation of the fact that he finds it convenient to come back tomorrow, because to me this is a fascinating discussion of a very great project.

Mr. DONDERO. I thought I would leave for fear he might convince me.

Mr. JONES. We will adjourn until tomorrow morning.

(Whereupon, at 11:05 a. m., the subcommittee adjourned until 10 a. m., the following day, Thursday, May 1, 1952.)

(Subsequently the meeting for May 1 was canceled and Mr. Clapp's continuation was scheduled for May 15, 1952.)

STUDY OF CIVIL WORKS

THURSDAY, MAY 15, 1952

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE TO STUDY CIVIL WORKS,
Washington, D. C.

The special subcommittee met, pursuant to adjournment, at 10:05 a. m., in room 1302, New House Office Building, Hon. Robert E. Jones, Jr., presiding; Charles D. Curran, staff director.

Mr. JONES. I am sorry we are going to be delayed, Mr. Clapp, and I assure you that this is no plot on the part of the committee. Every time you come up we have a 10 or 11 o'clock session of the House. I regret we were not able to have you yesterday.

In order that we can get as much done within the hour, I will say this: We will continue with the hearing just as long as time will permit. I expect we will have a roll call immediately after the call of the House, because we have a backlog of roll calls that have been carried over from Monday, Tuesday, and Wednesday, and I think there are either five or six roll calls scheduled to take place at this session.

When you were here last, Mr. Clapp, you had discussed one particular aspect of TVA, and that was the transportation operation of TVA. Also, you discussed in general terms some of the flood-control problems. In order to provide maximum continuity, your several days' testimony will, without objection, be printed consecutively in the transcript, but the record will show the actual dates of your appearance. Would you like to continue from that point?

STATEMENT OF GORDON R. CLAPP, CHAIRMAN OF THE BOARD, TENNESSEE VALLEY AUTHORITY

Mr. CLAPP. Thank you, Mr. Chairman. I would like, if I may, in order to maintain some continuity in the record, and at the risk of repetition, to summarize rather briefly some of the factual aspects of flood control and navigation as I covered them in more detail when I appeared before the committee on April 30. At that time, as you will recall, I summarized the record with respect to flood control and navigation, which are two of the major objectives in the TVA Act.

I pointed out that we built structures on the Tennessee River system pretty much in accord with a series of plans proposed in a report to the Congress in 1936, so that today we have approximately 12,000,000 acre-feet of flood-control storage around the first of the year, which is the beginning of the flood season in the Tennessee Valley. We have a navigable channel from Paducah, at the mouth of the Tennessee,

to Knoxville, about 620 miles away. This whole system of dams, some 28 in number on the Tennessee River and its tributaries, include 18 we have built, 5 we have purchased or acquired in one manner or another, and another 5 that are operated under agreements to coordinate their operations with the system of the TVA, even though the dams are owned by a private corporation, the Aluminum Co. of America.

I think I reported to the committee that our total net investment for flood control as of the end of the past fiscal year was $167,450,000. The annual cost of flood control, including operation, maintenance, depreciation, and a computed interest, was $5,500,000.

I pointed out to the committee that to balance this cost there is an estimated annual benefit of $11,145,000, divided about equally between benefits realized in the Tennessee Valley proper and on the lower Ohio and the lower Mississippi.

Mr. JONES. That ratio of benefit on flood control is about 2 to 1.

Mr. CLAPP. That is correct, Mr. Chairman. A very good ratio of benefits to cost.

I might indicate that at Chattanooga, the major large flood-danger spot on the Tennesse River, the savings resulting from the prevention of floods through control by the TVA reservoirs upstream from Chattanooga in these past 16 years has already amounted to more than $45,000,000. That alone is almost a third of the total amount of flood-control investment. Chattanooga has some local work to do in order to make itself safe from floods larger than those of record, but these upstream reservoirs that the TVA has built make it possible for local protective works to do an economical job to make Chattanooga safe from floods.

Mr. JONES. What is the nature of the work yet to be done at Chattanooga?

Mr. CLAPP. The plan, as has been proposed by the TVA and the Army engineers, would consist of a series of levees along the flood plain at Chattanooga. It would make it possible to confine the river within its banks on reduced crests made lower by virtue of upstream regulation.

With respect to navigation, I pointed out that the traffic of the Tennessee has increased from some 33,000,000 ton-miles in 1933 to almost 600,000,000 ton-miles in 1950. More important that that, I cited the change in the quality of the traffic; that is, how it has gone from rough and few materials and commodities to a wide variety of important basic commodities and materials.

The savings to shippers in 1951 amounted to more than $8,000,000. This compares with annual navigation costs in 1951, including depreciation, the computation of interest, and operation and maintenance costs incurred not only by TVA but also by the Army Corps of Engineers and the Coast Guard, of approximately $6,000,000 which as you will notice is a benefit-cost ratio of about 1.6 to 1.

The Tennessee is now an important artery of commerce. The net investment we have put into that part of the program totals $140,000,000 as of the past fiscal year. This part of the job, along with the flood-control part of the job, is about completed. We will need some improved modern locks at Wilson Dam and Hales Bar Dam one of these days. It is always necessary to carry on some channel-improve-

ment work, but the major job has been accomplished in preparing the river for good, solid navigation development.

I am sure the committee appreciates the reasons why we in TVA feel rather proud of the record of achievement that has come about thus far. We have been at this for 18 or 19 years. The TVA will have a birthday this coming May 18, next Sunday. That is the date the act creating the TVA was signed.

I want, in continuing my report this morning, to go on and recite the story of the other major part of the river-development program that has made possible the tremendous increase in the production and use of electricity in the Tennessee Valley. Before I get into the details of that, I want to indicate that, because the TVA was to develop all of the hydroelectricity that could be produced from a multiple-purpose system of dams on the Tennessee, and because it was to see that this electricity got the widest possible distribution at the lowest possible cost—in other words, a business-management assignment—the TVA, as this committee well knows, was set up quite differently from other agencies. It is a Government corporation. It has certain freedoms from the ordinary types of control, and the detailed regulations that characterize some of the old-line Government departments. We were and have been expected to carry out a business-managed operation, and for that reason we were given a greater degree of flexibility in the organization and administration of our work.

For that reason we have been able to avoid some of the delays and red tape and complicated procedures that are necessary or that develop in other parts of the Government service.

We can sue and be sued; we can be hauled into court like any private citizen and held accountable for damages that we allegedly create, or obligations that we allegedly failed to keep up.

Mr. ANGELL. Mr. Chairman, may I ask a question there?

Mr. JONES. Yes, Mr. Angell.

Mr. ANGELL. Mr. Clapp, under what authority is the TVA incorporated—Federal or State?

Mr. CLAPP. Under the TVA Act of 1933 enacted by the Congress.

Mr. ANGELL. It is not under the authority of any State. It is the Federal Government?

Mr. CLAPP. It is a Federal Government corporation, sir. We buy our own land, for example. In the course of our activities and programs to date, we have purchased approximately 1,000,000 acres of land. In that we have had to resort to condemnation in only 6 percent of the total. To give some indication as to how we have exercised this responsibility and discharged it, the awards made by the courts in those condemnation cases have averaged about 15 percent higher than the TVA's appraisals, which thus seems to indicate a fair and conservative policy on TVA's part.

We also have the authority to sell land that we do not need. We are constantly reviewing the requirements of our work, declaring land surplus and making it available, under proper procedures set up in the law, to private citizens and in some instances transferring it to other Federal agencies for purposes that will be in accord with the reasons for which the land was purchased.

We buy our own equipment and supplies.

Mr. JONES. Mr. Clapp, in that connection let me ask you one question. In the taking areas for a reservoir where there are families that

are to be relocated, does the TVA render any assistance to those people in looking for similar types of land, such as to a farmer to try to find land in other areas where he can continue the work he is best fitted for?

Mr. CLAPP. Indeed, we do, Mr. Chairman. As you and other members of the committee are probably aware, when you build a dam some people have to move. That can become a very difficult problem. It is difficult in any case for the individuals who have to move, because frequently they have lived there, or their families have lived there, for a long time, and there are sentimental as well as economic reasons why they would prefer to stay where they are.

TVA recognizes that it is not only an important economic problem to see to it that, within the limits of their desires and judgment, the move from the reservoir area to wherever the people want to go should at least make them not worse off, and hopefully might make them better off; but we entered into contracts with the agricultural extension services of the States in which these reservoirs were being built, and through them made assistance and guidance and counseling available to landowners and tenants who would be moving from the reservoir area.

In many instances they organized themselves into tour groups and went into adjoining areas and looked at farms that could be purchased. The extension-service people took great pains in trying to suggest—everything was on a voluntary basis, of course—in trying to suggest to the man who was to move that he try to get a somewhat better farm and, if possible, encouraged him to seek the kind of farm that would make it possible for him to adjust from bottom-land farming to hillside farming in many instances, which means going from row crops to pasture.

Mr. JONES. That is the case in my area, because I live in Scottsboro and saw the program that was being carried out, and it was quite successful. I remember back in those days it was contended that if we lost those river bottoms we would never produce any more corn in Jackson County. They moved to the uplands, and even with that tremendous loss we are producing about twice as much corn as we were at the time the land was taken.

Mr. CLAPP. I think, Mr. Chairman, you will find that is generally the record with respect to the effect on the productivity of the general area. We have in all relocated or helped to relocate from reservoir areas more than 14,000 families in these 18 to 19 years. That has been done with a minimum of friction and resentment. Everything has been on a voluntary basis. There have been some appealing cases of a desire not to move. That is perfectly understandable thing. One of the most difficult things the TVA has had to do is to tell people that the time will come when their land will be flooded an adjustment now has to be made. We have done everything in our power to make that a humane and human job of adjustment.

Mr. JONES. Do you attempt to provide considerable time where the person who is going to lose the land will have an opportunity to make surveys over a period of time?

Mr. CLAPP. Yes, Mr. Chairman. The scheduling of our construction projects, which I described in some detail when I appeared before the committee last, made it possible for us to announce plans sufficiently in advance so that frequently what we call the "taking time"

of the man's farm—the time when he would have to move—was months or years in advance. He would be advised specifically as to what month of the year it would be, and what year it would be, so that he could plan his crops; and frequently owners took crops off their land after they had actually moved to another location, they having made the plantings in the meantime.

Mr. JONES. What policy does TVA have with respect to public buildings and community facilities in towns that are being inundated?

Mr. CLAPP. We have worked out arrangements with each community or local or county government, as the case may be, to make appropriate adjustments. Frequently we have encouraged the county, for example, to use the relocating of a school building which had been in the reservoir area as the occasion for getting the State to help make a survey of educational facilities in the county as a whole. In some instances two or three counties combined to make such a study. During the course of relocating these buildings with appropriate compensation from the TVA, whole school-facility systems have been replanned, and the country or the area using the school facilities has made a substantial improvement in its whole program as a result.

Mr. JONES. Mr. Clapp, that brings me to another problem or question. It is evident from what you have stated that the TVA is a respecter of the local conditions and local problems. Oftentimes TVA has been accused of being a trespasser on the local sovereignty and the local rights. Would you like to comment on that?

Mr. CLAPP. Mr. Chairman, that is one of the most fanciful myths circulated about TVA that one could possibly dream up. I think when the history of this whole program is properly appraised, when the dams are regarded as old structures and the steam plants have served their useful life and new ones have taken their place, when the TVA as a builder of great projects is looked upon as a thing of the long past, then I believe the one thing that will seem most important in the history of this whole program is the way TVA sought to enlist the aid and assistance and cooperation of local governments and local agencies and local communities, rather than regarding itself as a superior and supreme Federal authority pushing local groups around.

The whole record of TVA's approach to the problems of regional development is full of instances where we have invited, urged, and frequently waited longer than we thought we should to get local communities to sit with us and counsel with us about what should be done in matters that would affect their future. Creating these lakes, for example, frequently has threatened to change the future of whole communities. Not flooding them out, necessarily, but flooding out parts of their trade area, or making a peninsula town out of what was before a crossroads in a cotton county.

Mr. JONES. Has any Governer of the States in the area in which TVA has served ever accused TVA of usurping local sovereignty?

Mr. CLAPP. Not to my knowledge. On the contrary, queries have been made by outside groups of the governors of the seven States in which the Tennessee Valley lies, asking them whether the TVA has enchroached upon the sovereignties of the States. The record will show—it is my recollection hat the St. Louis Post-Dispatch some several years ago made such a direct inquiry of all of the governors of the seven States, and each one of them was emphatic in pointing out that far from encroaching upon the sovereignty of the States, the TVA's

method of working with them and encouraging them to build up their own services in agriculture, and forestry, and minerals, and industrial development, and the like, had actually strengthened the State functions.

I had planned, Mr. Chairman, in the presentation of the story of the regional development tomorrow to give some figures with respect to the greater rate of increase in State funds from State sources in what you might call resource development activities, that is, agriculture, forestry, minerals development, stream sanitation, tourist promotion and recreation, and the like, with a diminishing amount of money coming from the TVA as the years have gone on.

If the TVA were interested, which it is not, in self-aggrandizement and taking over the functions of the States it would have had an excellent opportunity to do so because in 1933 the State governments of the Tennessee Valley area were hard-pressed, as were the States in most of the country, and we were assigned a big Federal job to do in that valley. We could have moved in and pushed the States to one side and said, "We will run our own agricultural program. We will run our own forestry program. We will advise these communities directly. We will not seek the aid of the States."

The States were ill equipped in many instances to do the things which they wanted to do in those fields. They did not have the people; they did not have the technicians; they did not have the money; and TVA could have used that as an excuse to say, "We have to get these things done and we have to get them done in a hurry, and we cannot wait for the States to do it." Instead, we said to the States, "These are functions you ought to be doing. We recognize you do not have the people to do them. We will enter into a contract with you whereby you can undertake to do them, and we will reimburse you for the performance of that service."

As the immediate need for many services diminished from our point of view as a Federal agency, the States in the meantime had incorporated those services right into their regular functions.

Mr. JONES. So that the TVA is an instrument of cooperation between the States and the Federal Government in carrying out the objectives established in the law?

Mr. CLAPP. Exactly right, Mr. Chairman. In the course of that cooperation one of our objectives in the TVA—and we believe in this, and we operate this way—is to do everything we can in achieving the objectives of the TVA Act in such a way that it will actually strengthen the smallest units of government.

Mr. ANGELL. May I ask a question, Mr. Chairman?

Mr. JONES. Yes.

Mr. ANGELL. Mr. Clapp, what power has Congress over the operations of the TVA?

Mr. CLAPP. The Congress could abolish the TVA, sir, by enactment of law. It could refuse——

Mr. ANGELL. My question has more reference to the operations that are going on. In what respect does the Congress participate in and have some control over the operations of TVA as it is being administered?

Mr. CLAPP. We come to the Congress each year for appropriations for that part of the program which is not financed out of revenues. That means most of the program except for power and chemical

operations. We are required and do report to the Congress in great detail once each year. A report on our activities including detailed financial statements and the performance of the year is published annually. We also are required under the law to make certain payments back into the Treasury from our revenue-producing operations, primarily from power.

The record of TVA's accountability to the Congress and the way in which that has been exercised, I think, is one of the most interesting examples of a Government agency endowed with reasonable flexibility and discretion within the limits of its assignment, held to a strict accountability by the Congress for performance and achievement of those objectives.

The appropriation hearings that are carried on each year frequently go beyond discussion of the particular things for which appropriations are being requested.

Mr. ANGELL. What total appropriations since it was incorporated have been made by the Federal Government to TVA?

Mr. CLAPP. Approximately as of 1951 about $1,000,000,000. That, of course, does not include all of the money that we have had available to us. If you add property transfers and revenues——

Mr. ANGELL. I do not mean all of the funds you have used, but moneys coming out of the Federal Treasury would aggregate, you say, about $1,000,000,000?

Mr. CLAPP. That is right.

Mr. ANGELL. What has been returned to the Federal Government? You stated some repayments are being made, particularly out of the receipts of the sale of hydroelectric power.

Mr. CLAPP. That is correct.

Mr. ANGELL. What total repayments have been made to the Federal Government?

Mr. CLAPP. The total repayments as of last June, 1951, from power proceeds were $54,000,000. Treasury funds invested in completed power facilities then totalled $413,000,000. In addition to that we have made payments from nonpower proceeds into the general funds of the Treasury that would bring that total up to approximately $63,000,000. Our payments, of course, are beginning to increase as our system gets larger and our revenues become greater.

Mr. ANGELL. Is there any other source of repayment to the Federal Government other than proceeds from the sale of hydroelectric power?

Mr. CLAPP. There is this, sir: The revenues which the TVA obtains from the sale of power are, of course, Government funds. A substantial portion of the total investment in the fixed assets of the power system is represented by earnings which might otherwise have been paid into the Federal Treasury, thereby reducing the amount which was appropriated. About $128,000,000, for example, of power revenues have gone into the system.

Mr. ANGELL. What is your rated capacity of production of power?

Mr. CLAPP. Our rated capacity at the present time is about 3,850,000 kilowatts.

Mr. ANGELL. Is that firm power?

Mr. CLAPP. No. That is not firm power. That is capacity.

Mr. ANGELL. What percentage of it is firm?

Mr. CLAPP. That would depend, sir, on the kind of water year that we get. Let me get that figure for you.

Mr. ANGELL. You may supply it, if you care to, later.

Mr. CLAPP. About a million and a half kilowatts, I am told, is considered firm hydro, on the average.

Mr. ANGELL. What is your production capacity from steam?

Mr. CLAPP. Our present production capacity from steam is about one million kilowatts. We are building now——

Mr. ANGELL. That is about one-third of your total production?

Mr. CLAPP. Of our total capacity. That is right. We are building now both hydro and steam, enough additional capacity so as to double our system in the next 3 years, and most of that is steam.

Mr. ANGELL. Does your steam come from coal of gas fuel?

Mr. CLAPP. From coal.

Mr. ANGELL. What is the cost of the production of that, as compared to the cost for hydro?

Mr. CLAPP. The steam-generated power, of course, is more expensive than the hydro.

Mr. ANGELL. How do your rates compare with the Columbia River rates?

Mr. CLAPP. Their rates are lower than ours. The Columbia River is a better river for hydroelectricity than the Tennessee. They have fewer storage reservoirs to build because they have the snowpack.

Mr. ANGELL. We have a rate of $17.50 a kilowatt year. Do you have a comparable rate in your area?

Mr. CLAPP. We do not compute it quite that way. It would be some higher than that.

Mr. ANGELL. What would you say you rate would be as compared with $17.50?

Mr. CLAPP. I can get that figures for you—$28—.

Mr. ANGELL. That is a little less than double?

Mr. CLAPP. That is right.

Mr. JONES. But you do not have the transmission costs they have in the Columbia area, do you?

Mr. CLAPP. We have transmission costs, Mr. Jones, but they are probably not as heavy as in the Northwest. Our terrain is rugged, but not quite that rugged. Our distances from generation to load are not as great, as a rule.

Mr. ANGELL. What is the fall in the Tennessee River from the upper to the lowest dam?

Mr. CLAPP. These figures on this profile indicate that. The height of the gates at Fort Loudoun Reservoir, which is the uppermost one on the mail river is 815 feet above sea level. The elevation below Kentucky, which is the dam farthest downstream at the mouth of the Tennessee, is 300 feet above sea level. The fall there is 515 feet in a river distance of some 620 miles.

Mr. ANGELL. Is all of the potential hydro power in the river now developed?

Mr. CLAPP. All of it in the main river and a large portion of it in the tributaries. The dams on the main river complete the development of the river from Paducah, which is at the mouth, to Knoxville, which is where the Tennessee forms from the conjunction of two tributaries. We are now filling up new empty stalls in some of the main stream dams, but it will not be long before all of those spaces are taken.

On the tributaries we have built many projects, as you know, and we are still building two on the upper Holston, which is a tributary of the Tennessee. There are additional sites on the tributaries. How fast we build those will depend somewhat on economic alternatives and labor and the materials situation.

Mr. ANGELL. Is it possible to build the storage reservoirs on the upper reaches of the river and its tributories to supply additional storage water for the lower dams so as to increase the production of hydro power?

Mr. CLAPP. Yes. Each storage on the tributaries, of course, has a beneficial effect.

Mr. ANGELL. I mean, additional dams to those you already have for increasing storage capacity.

Mr. CLAPP. Any additional dams we build will be on tributaries and will add to the——

Mr. ANGELL. My question is whether or not there are sites where storage capacity may be increased by building more dams.

Mr. CLAPP. Yes, there are.

Mr. ANGELL. What operations are carried on by TVA in the way of industrial activities, farming and other activities?

Mr. CLAPP. We have a very direct interest in those things.

Mr. ANGELL. I mean, carried on by TVA itself.

Mr. CLAPP. TVA's part in it sir, is somewhat indirectly expressed, although we have a direct interest in the result. Let me illustrate. We have in the Muscle Shoals area the chemical plants that were built during the First World War to produce nitrogen when the Chilean nitrates were cut off from this country.

Mr. ANGELL. You use that for fertilizer in the TVA area?

Mr. CLAPP. That is right. We have redeveloped those plants and rehabilitated them and developed some new processes through intensive laboratory and pilot-plant work, so that now they produce ammonium nitrate and various types of phosphate fertilizer. Those fertilizers were or are new types of materials. In order to test them out in practical farming conditions and also in order to be of help to the States and local agencies in improving the agriculture of the area, which is one of the things that TVA was instructed to interest itself in, these fertilizer materials over the past years have gone out for distribution under a test-demonstration program set up in cooperation with the agricultural colleges, with the State extension services, and agricultural experiment stations. Farmers have tried these materials out in actual farming operations, and in return for the fertilizer they also agree to develop farm plans to improve agricultural practices. The changes in farm management are directed primarily toward an increase of cover crops, soil-holding crops, and crops that will fit in with the idea of improved fertility and soil erosion control in the entire Tennessee Valley.

Those programs on the farms are supplemented by some experimental work we have helped carry on with the engineering experiment stations of the colleges and other research and educational agencies of the areas in developing and demonstrating improved types of farm machinery to help in the transfer and mechanization of small-type farms that are characteristic of the Tennessee Valley region.

Mr. ANGELL. Are the raw materials from which these products are made available, in the area, or do they have to be imported?

Mr. CLAPP. The phosphate rock that is the source of our phosphate materials exists in rather well-developed deposits in middle Tennessee, and we have mining operations in that area. We get the rock from those deposits and ship it to the chemical plants at Muscle Shoals, and some of it is used in a fused rock phosphate plant we have developed on an experimental basis in middle Tennessee near the mines.

The ammonium nitrate, of course, is a synthetic product that is made out of the ingredients of air and water. We do get some phosphate pebble rock from the Florida deposits, which are much larger than the middle Tennessee deposits. The middle Tennessee deposits, as you may know, are the smallest important deposits in the country, ranking third to Florida and the Rocky Mountain States, but the most highly developed in terms of production.

Mr. ANGELL. Are there any forest products in the area?

Mr. CLAPP. Yes. Forest products are a very important part of the economy. The region itself consists of more than 50 percent of timber and woodlands, though much of the timber is in small woodland lots owned as a part of small farms. The wood products industries have ahead of them a very great development, and they are now beginning to realize it. Wood products operations at the present time account for income to the region of about $200,000,000 a year, and our foresters and States foresters of the valley States estimate that that can be multiplied almost five times in the future.

Mr. ANGELL. Does the TVA carry forward a reforestation program?

Mr. CLAPP. We do in this way: We enter into agreements with the State forest agencies and the agricultural extension services whereby we provide seedlings to the State agencies for distribution to farmers who agree to make plantings as a part of their farm plans. Millions upon millions of trees have been planted through that procedure.

Mr. ANGELL. What types of trees are grown there in the area?

Mr. CLAPP. This area is the outstanding remaining hardwood area of the country, but most of the plantings that are being made now are in pine because they are faster growing.

Mr. ANGELL. Are those utilized for pulp and the making of paper?

Mr. CLAPP. They will be. There are some paper mills around the Tennessee Valley area now that draw upon the valley timber resources for pulpwood, and within recent months a very large paper company has made plans to locate right in the eastern part of the Tennessee Valley, which will improve greatly the utilization of pulpwood.

Mr. ANGELL. Are there any deposits suitable for the making of aluminum?

Mr. CLAPP. There are clays that have a better than average alumina content. There are no bauxite deposits of a grade high enough to justify their mining for that purpose. We do have two important aluminum industries in the valley. The Aluminum Co. of America operation in Alcoa, Tenn., and the Reynolds Metals at Lister Hill, Ala.

Mr. ANGELL. They are located close to the power and the bauxite is brought to them from outside?

Mr. CLAPP. That is right.

Mr. ANGELL. From South America and some from our own local deposits in the United States?

Mr. CLAPP. A good part of the supply for both companies comes from South America, or outside of this country, I believe.

Mr. ANGELL. Is there any irrigation development in the area?

Mr. CLAPP. Not of the type that one thinks of irrigation in western terms. We do have a growing practice of piped water applied either through seepage or in overhead sprays for intensive farm crops, truck gardens, and in some instances along the river for pastures; but it is not of the type of large ditch irrigation such as you have in the West.

Mr. ANGELL. Is natural gas available in that area?

Mr. CLAPP. Natural gas has become available within the last 2 or 3 years, but imported from outside the area.

Mr. ANGELL. Will that provide a cheaper fuel than the local coal?

Mr. CLAPP. We had hopes that it might. As a matter of fact, we had negotiated a contract with one of the gas-transmission companies that is running a pipeline through west Tennessee and up into Kentucky on its way to the East. We had hoped, and our contract did so provide, that we would get off-peak or interruptible gas from that company to use in a part of our new Johnsonville steam plant, which has recently gone into operation. It seemed it might be a good arrangement for the gas companies because it would help carry their investment, and help them find a use for off-peak supplies. But the Federal Power Commission denied them the permission to go through with that contract, so the gas moves on past us to the East.

Mr. ANGELL. Is there any navigation on the Tennessee River?

Mr. CLAPP. A great deal, sir. I cited figures here a moment ago which showed that in 1933, before we started to build these dams, there were about 33,000,000 ton-miles of traffic on the Tennessee system, and most of that was rough timber, ties, undressed logs, and short-haul rough products. In 1951 the traffic on the Tennessee was 589,000,000 ton-miles, with a rather dramatic change in the type of commodities. Finished automobiles, for example, are put on big barges at Evansville, Ind., on the Ohio River, and come down the Ohio up into Tennessee, and are put off at Guntersville, Ala., which is the southernmost point on the river.

Mr. ANGELL. There are locks provided at each of the dams?

Mr. CLAPP. On the main river dams, that is correct. From Kentucky Dam, which is the one near the mouth of the river, all the way through to and including Fort Loudon Dam, which is the dam just below Knoxville, there are locks, and, with the exception of the old locks at Wilson, and Hales bar very efficient locks with high lifts. We are getting grains in from the Middle West to help make up the grain deficiency in the Tennessee Valley. There are considerable shipments of coal.

Mr. ANGELL. Are petroleum products carried on the river?

Mr. CLAPP. Petroleum products are a very important commodity on the river coming from ports on the Mississippi both upstream and downstream from the mouth of the Ohio.

Mr. ANGELL. That is one of the most important cargoes on the Columbia River navigation traffic.

Mr. CLAPP. It is a very important one for the Tennessee. It comes in from the refineries in the Mississippi Valley, and the objective as a rule is to get as far east as possible into the Southeast. Chattanooga

is an important port where petroleum products are then transshipped into Atlanta and other parts for distribution.

Mr. ANGELL. Is the water level on the Tennessee kept uniform throughout the year so that it may be utilized twelve months of the year for transportation and navigation?

Mr. CLAPP. Uniform to the extent necessary for navigation. Uniform in the sense that we do not allow it to get below a minimum depth sufficient to provide for a 9-foot draft all through the year.

Mr. ANGELL. Do you have any flood damage in the area?

Mr. CLAPP. We had had substantial flood damage in the area prior to the construction of these dams. The Tennessee River before TVA dams were built was an important contributor to the floods on the lower Ohio and the lower Mississippi, and in some instances was contributing during the floods up to 25 percent of the total volume of the Ohio at its mouth. The most critical flood danger points in the Tennessee Basin are Ashville on a tributary and Chattanooga and a number of smaller cities right on the main river.

We have planned and built our reservoirs in such a way as to provide sufficient upstream storage above Chattanooga, which is the major danger point on the main river, so as to be able to reduce the crests at Chattanooga to a point where they are now within reach of feasible protection through the construction of local works, primarily levees. Those levees have not been constructed. They must be constructed to give Chattanooga the kind of protection Chattanooga should have.

The damages that our dams have prevented, however, up to date at Chattanooga, total more than $45,000,000, which is over one-fourth of the total investment in flood control in the whole system.

The effect of our regulation of water flow upon other places in the valley is equally important, although it does not add up to as much in dollars. The benefits from our flood-control system are divided about half and half between the valley itself on the one hand and the lower Ohio and the lower Mississippi on the other.

Mr. ANGELL. What is the annual average rainfall in this area?

Mr. CLAPP. About 51 inches for the whole region. The range goes as high as 90 and 100 inches in the mountains in the eastern end of the valley, but the average for the whole watershed is about 51 inches.

Mr. ANGELL. Is it subject to flash floods and sudden downpours and heavy rains during certain seasons of the year?

Mr. CLAPP. In the summertime flash floods are possible and relatively common in the eastern end of the system. The danger from flash floods, therefore, is confined pretty much to local situations in the mountains and the foothills. The major flood season of the Tennessee Basin is fortunately fairly well confined, as revealed by history and the pattern of rainfall, to the winter months.

Mr. ANGELL. Do you have in TVA mountain areas where the snow falls in winter and accumulates so as to provide water during the summer season?

Mr. CLAPP. No. We have snowfall, but relatively light snowfall, and none of it stores in the mountains. The elevations are not high enough. We have to build our reservoirs.

Mr. ANGELL. Does TVA carry on any navigation operations?

Mr. CLAPP. We have some barge transfer facilities at our steam plants along the river.

Mr. ANGELL. In your own operation do you do that?

Mr. CLAPP. We do that for our own operations. In addition to that we built four public-use terminals started in about 1942 at some carefully selected port along the river—at Decatur and at Guntersville in Alabama and at Chattanooga and Knoxville in Tennessee. We wanted to make sure that the navigation uses of the river would also be available to those shippers who ship in less-than-carload lots and who did not have transportation problems sufficiently large to justify building their own terminals. We announced at the time we built these terminals that we were looking forward to the time when their operations would be such as to attract private operators, or some local public agency to take them over.

Within the last year we have developed arrangements to transfer those terminals to private operators and we are looking forward to a successful transfer of those operations and a coal terminal at Harriman, Tenn., from our developmental handling to an effective privately run operation as a part of the transportation system of the area.

Mr. ANGELL. Does TVA carry on any agricultural operations?

Mr. CLAPP. Not as such, but the participation of TVA in the test demonstration programs through the availability of fertilizers produced by TVA, the research and studies that we carry on in agricultural development problems in cooperation with the universities and the extension services, puts us into agricultural programs in an important way; although we have no separate agricultural program.

Mr. ANGELL. In the course of your testimony before the committee will you give the committee information with reference to what changes TVA has brought about in the area with reference to agricultural development and forestry development, and any other developments? Give us the changes that have been brought about by TVA itself through your experimentation and pilot plants and all of your operations.

Mr. CLAPP. I had planned to do that, sir, and had hoped to give considerable detail on that after I have filled out the story on TVA's electricity.

Mr. ANGELL. It is very interesting. Thank you, sir. I am very pleased to get this information.

Mr. CLAPP. I appreciate your interest and the opportunity to respond to your specific questions.

The TVA activity in getting from the Tennessee River system the maximum amount of hydroelectricity consistent with its development for maximum flood control and navigation has perhaps become better known to the public generally than its flood-control and navigation activities, or its general regional resource-development activities. There is a solid foundation in the TVA Act for everything that TVA is doing in the field of electrical development.

In the first place, the act, as I explained to the committee earlier, authorized the TVA to build these multipurpose dams on the Tennessee system and equip them to produce hydroelectricity. We were also told in the act to distribute that electricity for the widest possible use at the lowest possible cost. With respect to that distribution obligation we were instructed in the law to give preference to States, counties, and here I am quoting from section 10 of the act:

> To States, counties, municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members.

This provision has been the basis for TVA entering into contracts with 146 municipalities and rural electric cooperatives through which TVA electricity reaches more than 1,200,000 ultimate consumers. These contracts, which are contracts between TVA and the municipal system or the rural electric cooperative commit TVA to become the exclusive supplier of electricity to the local agency, and commit the local agency to the task of distributing that electricity at rates agreed upon in the contract.

We also are instructed in the law to look upon these power projects under the control of TVA as projects—and here I am quoting from section 11 of this act:

> Projects to be considered primarily as for the benefit of the people of the section as a whole, and particularly the domestic and rural consumers to whom the power can economically be made available; and accordingly that sale to and use by industry shall be a secondary purpose to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such a manner as to encourage increased domestic and rural use of electricity.

Mr. ANGELL. We have a somewhat similar provision in the Bonneville Act, as you know.

Mr. CLAPP. I understand so, sir.

Mr. ANGELL. It is not quite as broad as that.

Mr. CLAPP. This is a broad description of the purpose of getting into the electricity business.

We consider these two provisions I have just read as our basic charter for our whole electricity operation. I call the attention of the committee particularly to the instruction from the Congress that this electricity was to be made available "particularly" to domestic and rural consumers and used for industrial purposes largely to help broaden the economic base upon which that whole electricity venture could rest.

Mr. ANGELL. What percentage of your power is used by industry?

Mr. CLAPP. About 65 percent, including the industries served by the municipalities and rural electric cooperatives. If you referred to the percentage served directly by the TVA, it is much smaller, of course.

The industrial consumers served by the municipalities and rural electric cooperatives who are not limited by our contracts in the type of load they can take on in their area provided it does not run into special characteristics that make it uneconomical for them——

Mr. ANGELL. Does TVA furnish power direct to industrial activities, or is it furnished through some of the other municipal groups?

Mr. CLAPP. We serve some of them directly, especially the unusually large loads, and those whose load characteristics are such as to make it difficult or inadvisable for them to be taken on as a part of a smaller load.

Mr. ANGELL. Like Alcoa, for instance?

Mr. CLAPP. Alcoa and Reynolds Metals Co., and the Victor Chemical Co., which has a large electrical furnace operation.

Industries that for example may be subject to interruption under the terms of a contract, because of the nature of their operations and, therefore, the type and quality of power they use, would create special problems for the distributor.

Mr. ANGELL. It gives you a market for your secondary power.

Mr. CLAPP. That is right. We may enter into and do enter into power sales contracts under our law for periods up to 20 years, subject to the condition that any contracts we enter into for sales of power to private companies or to individuals for resale at a profit shall be subject to recapture at the end of 5 years in the event that power is needed to meet the growth requirements of our preference customers.

We may and do include in our power sales contracts with the municipalities and rural electric cooperatives such terms and conditions, including resale rate schedules, as we deem necessary, and the municipalities and cooperatives are prepared to agree to, to carry out the purposes of the act.

The most important provisions in that respect are the provisions for agreed upon resale rates plus those governing how the distributor shall use its revenues. The resale rates are agreed upon in the contracts, and the distributor also agrees that its revenues—the revenues that the city system obtains or the rural electric system obtains—shall be used to repay their debt; to improve or add to their systems; and to reduce rates. The electricity revenues under these contracts, therefore, are not available far the general purposes of city government although tax equivalents are paid, but are confined to the problem and obligation of serving the electric consumer.

Mr. JONES. Mr. Clapp, let me ask you one question. In a reply to a query directed to you by Mr. Angell you stated that there were hydroelectric potentials on some of the tributaries of the river. If those dams were constructed on a hydroelectric potential, would that relieve the Tennessee Valley Authority of the necessity of building steam plants?

Mr. CLAPP. No, sir, Mr. Chairman. The quantities of electricity that can be developed from the remaining sites within economic feasibility on the tributaries of the Tennessee River will not meet the increased growth in loads that the Tennessee Valley area is experiencing. Let me explain.

When we started out, the whole area served by the TVA, which includes the watershed, which is 40,000 square miles in extent, and then includes an area around it which is equal to that again, thereby creating an area of 80,000 square miles served by TVA electricity—in 1933 that area used a billion and a half kilowatt-hours of electricity a year. This last year, fiscal year 1951, it used 19 billion kilowatt-hours. This year it will use 23 billion kilowatt-hours. The growth is tremendous.

Mr. ANGELL. What States benefit from your service on hydroelectric power?

Mr. CLAPP. [Indicating on map:] We serve in practically all of Tennessee; western Kentucky with the exception of some portions of it; a large area in Mississippi that would include the northern and northeastern part as far south as West Point and a little bit beyond.

Also, north Alabama and a small portion in northwest Georgia; some small areas in western North Carolina and reaching a little bit into Virginia, including the city of Bristol, which is on the State line, and some areas in south central Kentucky, and in this part of Kentucky north of—up to and just a little bit beyond the State line at Jellico, Tenn.

Mr. ANGELL. In your operations in the TVA have you found it most desirable and necessary from an economic standpoint to have steam plants to firm up your hydro power?

Mr. CLAPP. Yes, sir. The steam that we have been building is for that purpose, with this additional and very important consideration in mind: Much of the large defense load that the TVA has been asked to meet in the last 10 years, and particularly in the last 5 years, has made it necessary to add steam plants beyond what we would have added under our regular schedules for normal growth in order to firm up our hydro. But if you segregate that part of our steam capacity which is most useful in serving the high load factor and defense loads and take the remaining portion of our steam capacity related to our hydro, then that steam does firm up hydro, and we still need more steam to do it.

Mr. JONES. The committee will meet at 9:30 in the morning. We stand adjourned until 9:30 in the morning.

(Whereupon, at 11:15 a. m., the subcommittee adjourned until 9:30 a. m. the following day, Friday, May 16, 1952.)

STUDY OF CIVIL WORKS

FRIDAY, MAY 16, 1952

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS,
SPECIAL SUBCOMMITTEE TO STUDY CIVIL WORKS,
Washington, D. C.

The special subcommittee met, pursuant to adjournment, at 9:35 a. m., in room 1302, New House Office Building, Hon. Robert E. Jones, Jr., Presiding.

Charles D. Curran, staff director.

Mr. JONES. Mr. Clapp.

STATEMENT OF GORDON R. CLAPP, CHAIRMAN OF THE BOARD, TENNESSEE VALLEY AUTHORITY

Mr. CLAPP. Mr. Chairman, the material I covered yesterday related, as you will recall, to the provisions of the TVA Act, which authorize us to generate, transmit, and sell electricity. I described the policies set out in the act which govern our operation and our sale of power—operations which comprise the largest integrated electric system in the United States, serving an area of 80,000 square miles, in which about 5 million people live.

This power, as I explained, goes to the ultimate consumer through 146 local distribution agencies, 50 of which are cooperatives and 96 municipalities. They own their own distribution systems and they buy their power from the TVA.

I described how TVA operates a power system where water control and regulation is primarily for flood control and navigation, with power subordinated to those two purposes.

Now I would like, if I may, to give some figures which describe the financial basis for that power operation and then some figures which help to gage the results.

Section 14 of the TVA Act directed that TVA allocate to the purposes jointly served, the value of the Wilson Dam and other Government properties at Muscle Shoals as well as the cost of all future projects, including dams and steam plants. The TVA spent a great deal of time studying that question. Allocation of common cost is a common problem in almost any operation that serves more than one purpose. Experts devote entire careers to arguments and contentions over the allocation of common costs. It is a complex subject, but frequently made more complex than need be.

Now for some general figures from which I will then set out the investment base against which TVA's power earnings are related for the purposes of determining the average rate of return on the

investment. TVA has received from the Congress appropriations, as I mentioned yesterday, of $1,022,317,981 through June 30, 1951. If to this figure you add the value of property transferred, such as the Wilson Dam and the chemical plants and the other properties at Muscle Shoals that were turned over to TVA at the time it was established, and if you add to that the net operating revenues before depreciation that the TVA has received from the beginning and the $65,072,000 it has received from the sale or issuance of bonds as authorized under the law, you get a total figure of $1,420,000,000 that the TVA has had through June 30, 1951. Of this amount $940,000,000 has been devoted to the acquisition of fixed assets which are now in use and when I say "acquisition" I mean either purchase or construction, and mostly construction. That $940,000,000 includes $17,000,000 for general plant such as automotive and transportation equipment, warehouses—all those facilities that serve all TVA activities. Thirty million dollars is for chemical plant.

These are all original cost figures without the provision for depreciation indicated. If you subtract chemical and general plant items you get down to a figure of $893,000,000, which covers the expenditures for all facilities devoted to flood control, navigation, and to power. Since some of the plants were old and partially depreciated when acquired by TVA the original cost entered on TVA's books for all such facilities was $925,000,000. Now, for each of those purposes the books show at the present time, or as of June 30, 1951, $178,200,000 for flood control; $154,700,000 for navigation; and, $592,200,000 for power. Those are rounded-off figures. The $592,000,000 for power represents the original cost as entered on the books and includes $257,200,000 for single-purpose dams, that is, dams devoted to and built only for the purpose of producing hydroelectricity, steam plants, and transmission lines, substations, and other electrical equipment. That leaves $335,000,000 representing the power investment in the multiple-purpose dam system. That $335,000,000 includes $170,400,000 of investment devoted directly to power. For example, the powerhouse, the pen stocks that are built into the dam to carry the water from the upstream side of the dam down to the water wheel, the turbine down at the bottom of the generator. The rest of the $335,000,000, namely, $164,500,000, represents that portion of the common investment in the multiple-purpose dam system allocated to power.

Whatever argument there is, therefore, about the effect of the allocation of the investment in the multiple-purpose system of TVA among the purpose of flood control, navigation, and power, relates not to the total $592,000,000 devoted to power. It concerns only the question of how much of the residual common investment in the multiple-purpose dam system is allocated to power. In TVA's power investment figure $164,500,000 is that allocated amount. In the system as it stood as of 1951, that figure represents 41.5 percent of the common investment, 31 percent is allocated to flood control, and 27.5 percent to navigation.

The amount of common investment in the multiple-purpose system of dams is in total $396,000,000, of which, as I said, 41.5 percent or $164,500,000 is that portion allocated to power.

If you add the other fixed assets for flood control, navigation, and power, including all the transmission lines, all the substations, all the steam plants and single-purpose dams, and take the total figure, our

fixed assets devoted to all three purposes including the common investment, and then strike a percentage, you get 64 percent devoted to power, 19 percent devoted to flood control, and 17 percent devoted to navigation.

The theory of allocation as developed or applied by the group of experts in and outside of TVA who were called together for this purpose years ago was that which is referred to as the alternative justifiable expenditure method. There are many theories available in this field, as this committee well knows. TVA's allocation does not exactly fit any of the precise theories of the various experts, but the alternative justifiable expenditure method is the one that was used to guide TVA in its computations, and the allocation is a reasonable application of that method.

That method, if I can explain it in oversimplified fashion, is this: That portion of the common cost of a multiplepurpose project which any one of the purposes served should bear is of the same ratio to the total as the maximum amount which that purpose could justify, assuming a project were being built to serve that purpose alone, is to the sum of the amounts which each of the several purposes could so justify. In applying that method the computation was roughly done this way: Estimates of cost were made for a hypothetical Tennessee River system with dams providing the equivalent amount of power that the multiplepurpose system provides, but providing only for power with no flood control or navigation features. Then an estimate was made for a system of dams that would provide as much flood control on the Tennessee River system as the multiplepurpose system will provide with no power or navigation features. Another estimate was made that would provide as much navigation improvement as the multiplepurpose system does, but with nothing for flood control or power. These estimates of cost of providing alternative single-purpose systems define the maximum amount each purpose would be warranted in contributing toward the cost of the multipurpose system of projects.

Then in order to ascertain the amount each purpose would be justified in contributing to the common portion of the multipurpose system of projects there was subtracted from each of those single-purpose estimates the cost of those features of the multipurpose system which would not be included except as it was necessary for the respective purpose. For example, in the single-purpose power system, the cost of the feature of the multipurpose system, such as the powerhouse and the equipment in it, was deducted from the estimated total single-purpose power system cost. Any penstocks or operating mechanisms necessary to operate the system for power purposes and which were not required for any other purpose were deducted. Finally you get down to the amount which power has in a single-purpose system such as the dam and reservoir which also could be useful in serving any other purposes.

A similar procedure is followed with respect to each of the other three estimates, stripping from the navigation system all of the features that were specifically and exclusively useful for navigation, and similarly for flood control. There would be taken away the cost of the flood gates and sluices for releasing water, when the reservoir levels were below the spillway crest. In each case, therefore, you get the amount which each purpose could contribute to the common

facilities of the multipurpose system such as the reservoir and the concrete in the dam, that is a common part of the project to which the other single purpose appurtenances are attached.

Mr. JONES. May I ask you a question at that point? Is that a composite figure or are those composite figures reflecting the relationship of one dam to another, or is it a figure based upon a single installation?

Mr. CLAPP. The estimates that are used for the theoretical purpose of determining an allocation proportion would be a system as a whole, Mr. Chairman. TVA's allocation in fact is based on the taking of the system as a whole.

Mr. JONES. Could that same system be employed in the analysis of a single dam to compute the cost allocations?

Mr. CLAPP. Yes; it could. That same theory could be applied to the determination of what is common investment in a single project and how to allocate that common investment among the various purposes it serves. As a matter of fact, our first allocation in the TVA was for Wilson Dam, the Norris Dam, and I think Wheeler. It was a three-dam system, but the method can be applied either to a single structure serving various purposes or to a system of structures.

Mr. JONES. How do you first begin the calculations or the estimations of benefit ratios to cost? Do you start by saying that this will benefit so much and consequently would justify spending $100,000,000 on a dam, or do you start with the requirements and work down to the benefits? Do you start from the benefits first or do you start from the construction figures first?

Mr. CLAPP. The Engineers have to start first with the river, Mr. Chairman, as you know.

Mr. JONES. That is rather an important point, because we have different systems in making estimations of cost-benefit ratios. We have different criteria for different agencies, so that is a matter of prime importance to this committee.

Mr. CLAPP. I understand that, sir. The TVA approach to the problem of determining how much expenditure is justified and how much investment is justified in a project, is to develop what the project would cost, under several alternatives varying in the extent to which the several purposes are included. It then places or makes an evaluation of the purposes to be achieved, and relates them to the cost. Obviously that method provides for some adjustment in order to get the best conceivable practical ratio between benefits and cost.

For example, on a particular site one could get more flood control by raising the height of the dam, but you reach a point beyond which if you raise it you get diminishing returns in terms of flood control, and your cost per acre-foot of flood control goes up and goes up too much in relation to added benefits. Therefore the Engineers begin to adjust by the application of benefits to cost relationships and achieve the best results between the extremes.

Mr. JONES. I thought the higher you built the dam the more reservoir you created and the more flood control.

Mr. CLAPP. You would create more flood control, Mr. Chairman, but the costs would begin to get so high that the benefits would not be worth the cost. I can illustrate that this way in a practical example.

When TVA engineers planned the storage dams on the main river above Chattanooga and on the tributaries above Chattanooga they

had the alternatives available to them of planning for enough storage in those reservoirs to give Chattanooga practically complete protection from the worst flood which could occur. That would have meant dams higher than we actually designed and built. The reason that we did not build them higher than we did to provide more upstream storage for protection at that critical point was because by building them to the elevation we did build them and then assuming the construction of local protection works around the flood plain in Chattanooga, the total cost of the two would achieve flood control more economically than the higher upstream storage reservoirs, because as you push into larger acreages your flood-control unit costs may go up.

To come back to the allocation, after you have determined the costs of a single system for navigation and a single system for flood control and a single system for power, then the ratios of those costs to their sum become the ratios by which you allocate to the several purposes the common cost of the actual system you do build in multiple-purpose dams.

As I said, the method that our experts selected among all of the theories available was not precisely applied to a split-decimal-point figure, but it was used as a guide to check the logic of the calculations, and the ultimate and final allocation was a combined application of theory and good judgment.

Actually, I think this committee would find if it goes into these complicated matters of allocation that in the last analysis someone has to decide how the investment for several purposes in a common structure useful for those several purposes will be allocated among the purposes to be served. There can be theories to guide the computation. The ultimate test is: Was it a reasonable division of investment among the purposes served?

We had occasion to have TVA's judgment in that matter carefully studied and examined several years ago when the Public Works Committee of the Senate asked the Federal Power Commission to review, for advice to the committee, the allocation of common investment made by the TVA. The Federal Power Commission did so and issued a very exhaustive report, and came to the conclusion that the method used by the TVA was a reasonable method; that it was applied with accuracy; and that the conclusions reached and reflected in the allocations are reasonable and sound.

Now, with the allocation of the common investment among flood control, navigation, and power the committee, I believe, can then understand of what the total power-investment figure consists. I gave you a figure of $592,000,000, representing the total power investment as of June 30, 1951. That figure corrected for reserve for depreciation becomes $495,000,000. That amount also happens to be the same as the average investment devoted to power during fiscal year 1951.

Now, in that same year, 1951, TVA produced net earnings after all operating costs, depreciation, payments in lieu of taxes to the States and counties in which TVA operates or has power operation—all costs that are to be covered and included and reflected in any system that follows the Federal Power Commission's system of accounts for utility systems, which the TVA does—net earnings of $26,700,000.

Mr. JONES. What was that figure?

Mr. CLAPP. $26,700,000. If you relate that to the $495,000,000, which was the average investment devoted to power for 1951, you get a rate of return of 5.4 percent in 1951. For the period from 1934 through 1951 the average rate of return was slightly in excess of 4 percent on the average investment for that whole period.

I call the committee's attention to the fact that between 1934 and 1939 the TVA was not selling much power. There were several reasons for that. The major one was that we were being kept from our market by litigation that went into the courts and through the Supreme Court, and was finally resolved favorably to the Government and to the TVA. However, it was not until 1939, when the way had been cleared for the large acquisition, principally the acquisition of the Commonwealth & Southern properties operating in parts of the Tennessee Valley area—a negotiation in which Mr. Willkie represented the Commonwealth & Southern properties—it was not until that acquisition that TVA really began to reach its market and was able to carry out the purposes of the TVA Act, which authorized and admonished the TVA to bring about the widest possible distribution of electricity in the area at the lowest possible cost.

Mr. ANGELL. Mr. Clapp, in reaching that did you take into consideration depreciation?

Mr. CLAPP. Yes; now, the municipalities and the cooperatives to whom the TVA sells power wholesale also have a part of this financial story of the TVA power system. These municipal and cooperative electric systems, of course, are independent and stand on their own feet. They are autonomous in their own right. They had in 1951 combined net revenues of $20,300,000. That revenue represents an 8-percent return on their depreciated-plant investment in service.

Let me give the committee now very briefly a concise statement of TVA's financial results from a cash point of view. I am talking here only about the power system.

Since 1933 the TVA power system has received $496,000,000 in revenues. These revenues have been used in the following way: Operating expenses, interest on bonded indebtedness, payments in lieu of taxes to States and counties, account for $209,000,000. This is for the whole period from 1933 through 1951. Provision for depreciation, $105,000,000, making a total expense of $314,000,000. That leaves a net income, subtracting the $314,000,000 from the $496,000,000, of $182,000,000 between 1933 and 1951.

Mr. JONES. Do you have any figures that would reflect the savings to the consumers of electricity if they had paid the national average?

Mr. CLAPP. Mr. Chairman, that figure is approximately $50,000,000.

Mr. JONES. For what period?

Mr. CLAPP. A year. For the year 1951. Let me put it this way: If all of the electricity consumers that use TVA electricity had used the same amount in 1951 as they did actually, and had paid for it at rates in line with the national average, they would have paid $50,000,000 more than they did.

This $182,000,000 of net income which the TVA power system has produced has been used in this way: $54,000,000 of it has gone back into the Federal Treasury as cash payments. That $54,000,000 includes or consists of $21,000,000 used to retire bonds, and $33,000,000 in cash entered as miscellaneous receipts into the general funds of the

Treasury. The remainder of $128,000,000 has been reinvested in the TVA system.

Mr. JONES. By what authority?

Mr. CLAPP. By authority of section 26 of the TVA Act.

Mr. JONES. Is that reviewed annually by the Appropriations Committee?

Mr. CLAPP. Yes; that is included in our report at the time of our hearings before the Appropirations Committees. It is a subject of annual discussion.

Mr. ANGELL. Mr. Clapp, you mentioned bonds. Does TVA issue bonds to carry on its operations?

Mr. CLAPP. With the exception of a limited authorization principally related to refunding, TVA has no authority to issue bonds now, Mr. Angell. It was granted authority to issue bonds for certain purposes in the original legislation and by a later amendment to the TVA Act primarily for the purpose of making possible the acquisition of the large utility properties which TVA bought in 1939. That authority to issue bonds has expired.

Mr. ANGELL. Those bonds are guaranteed by the Federal Government?

Mr. CLAPP. That is right.

Mr. ANGELL. What rate of interest do they bear?

Mr. CLAPP. We pay into the Federal Treasury almost 2 percent on those bonds. They are held by the Treasury and were never put on the market because they were such a small amount.

With that background understood as the basis for TVA's power operations let me describe briefly TVA's wholesale rates and the resale rates which the distributors by contract with the TVA have applied, and then I would like to give you a figure or two on the results.

Of course, rate structures are a complicated business, and what I am about to give you is an oversimplification of our wholesale rate structure, but it is as follows:

At the time it was first set up it called for a demand charge of 90 cents per month per kilowatt of peak load, plus an energy charge of 4 mills per kilowatt-hour for the first 100,000 kilowatt-hours per month, 3 mills per kilowatt-hour for the next 200,000, 2½ mills per kilowatt-hour for the next 700,000, and 2 mills per kilowatt-hour for all energy in excess of 1,000,000.

Basically this wholesale rate schedule has remained unchanged through all these years, although recently we have worked out with the distributors of TVA electricity an upward adjustment in their rates to large users, namely, to large industries, although we have not worked out any upward revision, and do not intend to, for the small consumers. The reason for the upward adjustment in large industrial loads is to reflect the fact that as we are adding steam to our system and inasmuch as steam plants are utilized to serve users with high load factors—those who use energy most of the time about up to the capacity we reserve to serve them—we are passing that increased cost on to the large users and thereby continuing to protect the small consumers as directed in our law.

Now, these are the wholesale rates which have earned for the TVA and the United States Government through the TVA this return of between 4 and 5 percent on the average investment devoted to power

since 1933. In the contracts we have with our distributors there is a basic residential rate schedule agreed upon between the distributor and the TVA. That resale rate provides rates of 3 cents, 2 cents, 1 cent, and 4 mills per kilowatt-hour for successive blocks of power up to 1,400 kilowatt-hours. Then it goes back up to 7½ mills for all additional power.

There are schedules of resale rates lower than the schedule I have just recited, and a growing proportion of the distributors of TVA electricity are moving on to those lower resale rates as their financial condition makes it possible for them to do so. As a result of these promotional rates the average residential use in the TVA area increased by 525 percent from 1933 to 1951.

Mr. JONES. How does that compare with the national average?

Mr. CLAPP. The national average, Mr. Chairman, is about 234 percent increase for the Nation as a whole. The actual figures are these: In 1951 the average residential use in the Tennessee Valley was 3,747 kilowatt-hours, as compared with 2,004 kilowatt hours for the Nation as a whole.

Mr. ANGELL. Mr. Clapp, do you have the figures for the Columbia River area?

Mr. CLAPP. I do not have them in mind, Mr. Angell, but I know they are very high. Your agricultural use as well as your residential uses brings it up very high. The same kinds of promotional rate policies to a large extent would explain your high average use for residential consumers in the Northwest.

I think the committee would be interested in these figures: For that 3,747 kilowatt-hour average residential use, the average TVA consumer paid $51.32, or an average of 1.37 cents per kilowatt-hour. The average residential user for the Nation as a whole who used only 2,000 kilowatt-hours paid more for the 2,000 than the residential consumer of the Tennessee Valley paid for 3,700 kilowatt-hours.

Mr. DONDERO. You do not use that statement, Mr. Clapp, to indict private enterprise in the production of electric power; do you?

Mr. CLAPP. Mr. Dondero, I am not indicting anybody. I am just reciting these figures.

Mr. DONDERO. Private enterprise produces about 80 percent of the electric energy used in this country.

Mr. CLAPP. I believe that is correct. It is a big business and they are prospering.

The average residential consumer in the Nation for that 2,000 kilowatt-hours in that year paid $56.31, or an average of 2.81 cents per kilowatt-hour.

The point of those figures, if our experience points to the conclusion we think it does, is that obviously as you reduce the cost of electricity you will increase its use and make the investment which serves that consumer work closer to full time, and thereby sustain the lower rates.

Mr. DONDERO. Mr. Chairman.

Mr. JONES. Mr. Dondero.

Mr. DONDERO. Mr. Clapp, you were here the other day and somewhat in a facetious vein I said that if I did not get out of the room you would have me convinced, too. I refer back to that for the purpose of saying this: There is nothing in the statement presented to this committee by which you want this committee to understand that there is anything mysterious or secret on the part of the production of elec-

tric energy by the Government which gives you an advantage over private enterprise and private investment? You are not saying that to us, are you, as the reason that you can produce it cheaper than private enterprise can produce it?

Mr. CLAPP. There is no mystery in it, Mr. Dondero, and there is no secret about it.

Mr. DONDERO. Give private enterprise the same opportunity and advantages you have as a governmental agency and they could produce it perhaps at the same price as you produce it.

Mr. CLAPP. Some of them do, Mr. Dondero.

Mr. DONDERO. In spite of the taxation burden.

Mr. CLAPP. That is another story. Some of them do produce it as cheaply, or almost as cheaply as we do, because they have some advantages inherent in the nature of the sources from which they generate their power. As a matter of fact, many of our neighboring utilities, private companies in good standing and doing an aggressive job, have perhaps by influence of the example of their near neighbor, the TVA, reduced their rates over the years. Some put in rate reductions at the time TVA announced its low rates in 1933–34. Their volume of sales went up. They had to install more capacity to supply the increased load. Electricity, which had heretofore been limited in use to a few drop bulbs in the ceilings in the towns and cities, began to be demanded out in the rural areas. With the growth of rural electrification, sponsored in large part by the REA and in part by the activities of the private companies when they began to see the light, the new uses of electricity began to reach into areas and serve purposes which high rates never permitted electricity to serve.

Mr. DONDERO. I am in accord with your view that the cheaper you can make this to the people who want it and can use it, the more will be used. There is no question about it. I think you are entirely right.

Mr. CLAPP. The record of electric-use growth in the Tennessee Valley, of course, is one of the brightest spots in this whole story of TVA enterprise. At the present time with a system of 3¾ million kilowatts we have under construction a program that will add almost as much again in capacity, so that by 1954 we will have in service 6,700,000 kilowatts of capacity, and by 1955 more than 8,000,000 kilowatts. We see no substantial diminution in the rate of increasing demand for electricity.

I want to emphasize as clearly as I can with this committee, which has a very special interest and responsibility for the TVA, that TVA, after the careful consideration and decision by the Congress expressed in the amendments to the TVA Act, that made possible the major acquisitions of private utility properties in 1939, with Congress fully cognizant of the contracts with municipalities and rural-electrification cooperatives into which TVA had entered, TVA then became the exclusive and sole power supplier of the distribution agencies for this area of 80,000 square miles. Consequently the growing demand for electricity, which is so vital to the economic growth of the region, is a responsibility of the TVA, and by that token it is a responsibility of the Congress.

The Congress has firmly and consistently, over a period of years, made it possible for the TVA to keep up with its obligations to serve the growing requirements of the Tennessee Valley region, and we are hopeful that the kind of a job we are doing and have proved that we

can do will continue to merit the confidence of the Congress and the people.

Now if I may move on to some of the other and important features of the TVA's responsibilities and its record of results I will try to finish my statement. I have described the flood-control system of the TVA. I have told how we have made the channel of the Tennessee River navigable for the distance provided in the TVA Act, and I have described the successful story of TVA generation and transmission and sale of electric power, a success story both from a financial point of view and from a point of view of service in the growth of a region.

Now I want to tell you briefly about a very important facility which the TVA operates and maintains and constantly rebuilds and improves, namely, the chemical plants at Muscle Shoals in northern Alabama. This committee will undoubtedly recall the origin of those chemical plants as growing out of the National Defense Act of 1916. At that time Chilean nitrates, upon which this country had depended for its nitrogen in munitions and fertilizers, were cut off as a result of the blockades during the war. One of the Muscle Shoals chemical plants, as authorized under the law and appropriated for by the Congress, was designed to become the United States first effort in the field of synthetic nitrogen production. The other, and larger, plant was designed to use the Cyanamid process. Those plants were built, but they were never operated in the form in which they were built. They remained idle all through the twenties and along with Wilson Dam became a part of the historical and controversial Muscle Shoals issue.

Senator Norris of Nebraska fought all through those years to make sure that those chemical plants and the Wilson Dam would become the nucleus around which this whole Tennessee Valley development might emerge. At the time the TVA was set up, provisions of the act turned over to the TVA, this newly created Government corporation, the chemical plants and facilities at Muscle Shoals. The TVA was directed to regard them as a facility of utmost importance in time of national defense and a facility to be made useful for agricultural purposes in times of peace. The plants were idle and obsolete in part. The TVA organized a chemical engineering group under the leadership of Dr. Harry A. Curtis, who at the present time is my colleague on the Board, and who in early years was our chief chemical engineer.

Those plants have since been rehabilitated and added to in substantial amounts. We have always regarded them as a facility of importance to the national defense. We have used them as a national laboratory in which to develop and experiment with and prove the feasibility of new and improved processes for the manufacture of phosphates and nitrate fertilizer.

In order to make them most useful for national defense, and in order to demonstrate the industrial utility of large quantities of power and to improve the processes by which phosphate rock could be smelted, the TVA developed some electric furnace processes and installed them in the chemical plants at Muscle Shoals, rehabilitating much of the old equipment that was there for that purpose. From those electric furnaces we make elemental phosphorus. That elemental phosphorus is useful for military purposes. It is also a basic ingredient from which high-grade, high-concentrate phosphate fertilizers can be made and are made by TVA processing.

To illustrate the wisdom of the Congress in designating that facility as an important national defense facility, by the time World War II came along the TVA became the principal supplier of the military forces for military phosphorus. Furthermore, by the time the war came along we had developed some high-analysis or some high-concentrate fertilizers, phosphate fertilizers, which became very important to our food-production program during the war.

As I related to the committee yesterday, these new products that we produced, namely, calcium metaphosphate, triple superphosphate, and fused tricalciumphosphate, moved out into practical farms for tests and demonstrations, so that we could determine the effectiveness of their use.

I would like to recite in great detail the story of the development of these improved processes at our plants in Muscle Shoals and in middle Tennessee, where we mine phosphate rock as our raw material; but let me confine it to a few figures, and perhaps then the committee may wish to get further information by questions.

These facilities in Muscle Shoals and in middle Tennessee constitute a set of plants or facilities that are on our books at $19,900,000, which represents original cost less reserve for depreciation. During fiscal year 1951 we operated these plants in such a way that we received revenues of $17,300,000 with which to cover operating expenses, including depreciation, for a total of $16,000,000, leaving us a net before making any allowance for research expense of $1,300,000; after research costs, a net of $226,000. I recite those financial figures first for this reason: They show that we are barely breaking even in that operation.

Mr. JONES. How do you break even? I do not understand that.

Mr. CLAPP. We break even, Mr. Jones, because one of the products that is distributed by the TVA, namely, ammonium nitrate, is not an experimental product any longer. Consequently it can go into salable channels for special purposes, which I shall explain later, and be distributed at a price which is sufficiently above TVA's cost of production to help us carry some of the red figures from the distribution of our more experimental products.

The reason why we do not make a lot of money in our fertilizer operation is that this is not a commercial-fertilizer business.

Mr. JONES. Have these methods and these discoveries been made available to private industry for them to utilize?

Mr. CLAPP. Indeed they have.

Mr. JONES. To what extent?

Mr. CLAPP. To a great extent. There are new plants now being built by private companies using designs based upon the operations conducted by TVA at Muscle Shoals.

Mr. DONDERO. I am going to ask you, Mr. Clapp. Do you enter into a competitive field in the production of these nitrates or these phosphates for fertilizer purposes?

Mr. CLAPP. No; we are not a competitor, Mr. Dondero.

Mr. DONDERO. I thought if you were given a slight increase in the price of your product you might overcome that narrow margin that you have left after a year's operation. That was the only purpose of the question.

Mr. CLAPP. Mr. Dondero, we could charge more than we do for our ammonium nitrate and still be within the market price range for

nitrogen products, but we are making so much on that particular product now that we are a little bit embarrassed by it. The price of nitrogen over the country could come down, and we like to keep our product a little bit below market for that purpose. The primary purpose of our operation of Muscle Shoals is not to be competitive with the fertilizer industry, but to pioneer and show the way in the development of new products, and to be sure that higher concentrate, more efficient fertilizer products, will find a good market.

The use of these materials which contain a higher proportion of plant food per unit of materials, is demonstrated and tried out in the test demonstration program as well as in experimental product tests, and the like, at experiment stations and in greenhouses. Then, as farmers become accustomed to their use in neighborhood after neighborhood they begin to demand from the fertilizer industry the same quality of high-concentate materials.

Let me illustrate. The test demonstration program is most heavily concentrated in the Tennessee Valley and within that area, there are some counties where the number of test demonstrations has been unusually high, because we were trying to alleviate some of the effects of relocation of families through the building of flood control and storage reservoirs. We find that where TVA materials are being most intensively used in test demonstration work by practical, everyday farmers, the demand for products from private fertilizer companies and dealers has gone up two, three, four and five hundred percent, compared with relatively smaller increases in demand in areas where the test demonstration program is not at work.

Mr. JONES. In our county it went up 1,300 percent, Mr. Clapp.

On the point you are talking about let me relate some practical experience. I lived on a farm adjoining a demonstration farm. I saw the accomplishments being made on that farm, and as a result I went out and purchased the same kind of fertilizers that he was using from a commercial producer. In 2 years' time I increased cotton production over 200 percent. It was very profitable for me to do it. So that has been multiplied many times over in my own home county, and through that valley area.

Mr. CLAPP. One could recite, I am sure, Mr. Chairman, many such practical examples of the effective results of practical test demonstrations.

Mr. JONES. Do you send your fertilizers just to the Tennessee Valley area?

Mr. CLAPP. No, sir. On the contrary, much of it goes outside of the Tennessee Valley area. I would like to recite some figures on that, if I may. These are figures for distribution of TVA test demonstration fertilizer materials from the beginning of our program up through June 30, 1951. This includes the products of triple superphosphate, which is now a well-established phosphate material of 45 percent P_2O_5, or phosphoric pentoxide in the finished bagged material. It includes calcium metaphosphate, which is a 62 percent concentrate material, and fused tricalcium phosphate and ammonium nitrate. From the beginning up through June 30, 1951, 1,400,000 tons of these materials were distributed inside the Tennessee Valley and 3,383,000 tons were distributed outside the Tennessee Valley. Now that includes in addition to distribution for test demonstration purposes also distribution of the materials that we put in sales channels, and includes

export during the war under lend-lease to help our allies increase food production.

For example, during the war we shipped substantial quantities of calcium metaphosphate to Great Britain. It is such a highly concentrated material that you could get three times as much plant food in the same shipping space as compared with ordinary superphosphate. Great Britain used it in the expansion of its agricultural production during the war.

For test demonstration purposes alone we distributed during all of that period 181,000 tons of triple superphosphate in the valley and 93,000 tons outside the valley. We distributed in the valley 36,000 tons of calcium metaphosphate and 51,000 tons outside the valley. One hunderd and ten thousand tons of fused tricalciumphosphate were distributed inside the valley and 7,000 outside the valley. Seventeen thousand tons of ammonium nitrate were distributed inside the valley and 10,000 tons outside the valley.

I would like to call attention of the committee to a very interesting figure. In that list I cited 36,000 tons of calcium metaphosphate inside the valley, but 51,000 tons outside of the Tennessee Valley. The reason for that difference is this: It brings up a very important consideration that TVA takes into account in carrying on its experimental and developmental work at Muscle Shoals in the field of phosphate fertilizer. We sent more of that material, that is, this high-concentrate 62 percent P_2O_5 material, outside the Tennessee Valley into the Middle West principally and into some parts of the far West, but mostly the Middle West, because as you increase the concentration of phosphoric acid content in the fertilizer you can, of course, ship plant food a greater distance at less cost. The Middle West in the years since the beginning of the war is just beginning to learn that it must use and can use effectively large quantities of phosphate fertilizers.

Phosphate, as the committee knows, deals with basic fertility. It is a soil mineral and has more to do with the quality of the fertility of the soil and its sustained productivity than the immediate year's effect upon quantity of the crop. The reason that we are putting a larger quantity of this calcium metaphosphate into the Middle West is so that farmers in that area, test demonstration farmers under State programs, will test out the material and learn to use it and then begin either to supply it to themselves through their own mining, manufacturing, and distribution facilities—which some of them in cooperative organizations are beginning to consider—or get it from private industry when they can persuade private industry to go into the manufacture of calcium metaphosphate.

The importance of the Middle West's interest in calcium metaphosphate or high-concentrate materials is this: The deposits of phosphate in this country, as I mentioned to this committee yesterday, are principally in three places—middle Tennessee has small deposits of about 1 percent of the Nation's reserve; Florida has about 24 percent of the Nation's reserves; and the Rocky Mountain States have the rest. The Tennessee deposits, though they are the smallest in quantity, are the most highly developed and are carrying too much of the Nation's production. Phosphate is an exhaustible resource. Once it is used it is gone. You cannot produce it synthetically. It comes from the bone deposits of prehistoric animals, and we will have to wait a long time to replenish those deposits.

The Florida deposits are developed next in intensity to the Tennessee deposits. The western deposits are just beginning to be opened up. TVA is interested in perfecting and getting used high-concentrate phosphate materials in agriculture, particularly in the Middle West, so that it will be feasible economically to develop western deposits, process them into high-grade, high-concentrate phosphate products, and the higher the plant food content is the cheaper it can be shipped to the farmers of the Middle West from the western deposits. We are interested in that for two reasons. One, we want to ease the burden on these dwindling Tennessee deposits as a matter of conservation and as a matter of national defense, because phosphate is a key material for military warfare and the Tennessee Valley is a strategic internal defense area. Another reason is that we think in the national interest the western deposits should be opened up and developed so that they can serve more of the Nation's farmers with the kinds of fertilizer materials agriculture must have if our soil fertility is to be sustained.

Mr. JONES. How many States outside of the Tennessee Valley area are carrying on unit test demonstration farms?

Mr. CLAPP. About 20 States, Mr. Jones. That number may be cut down in the future because we are beginning to consolidate the test demonstration program into a smaller number of farms. Now that some of the major regions have been demonstrated we want to concentrate on smaller numbers of farms. The number of States may remain the same even though the number of farms is reduced, in order to get more intensive tests and demonstrations.

Mr. DONDERO. May I inquire, Mr. Chairman, whether the western development is being done by the Government or by private industry?

Mr. CLAPP. The western phosphate fields are being developed by private interests, Mr. Dondero. There are two plant developments that we know of; one of them obtained considerable design assistance or help from the TVA, that is, the use of TVA processes and drawings for its own engineering work.

Mr. DONDERO. You used the expression a little while ago, "If we could persuade private interests or manufacturers to produce a certain kind of fertilizer" that you mentioned, I did not quite get the name. Is there anything in the picture which would prevent them from doing it, on a basis that it could be produced economically, so that they have a margin of profit to justify its production?

Mr. CLAPP. There is nothing to prevent them from doing it, that is, from developing the production of calcium metaphosphate and doing so at a profit ultimately. The problem that industry has—and I am not implying a criticism of their apparent slowness, Mr. Dondero——

Mr. DONDERO. No; I did not accept your statement as a criticism I simply was challenged by the statement as to why they could not be persuaded to do it or why they have not done it.

Mr. CLAPP. One of the reasons why the change in the industry is slow is that they, of course, get their investment fixed in certain types of processes, principally the manufacture of ordinary superphosphate, which is a lower-concentrate material of about 18 percent P_2O_5 per hundred pounds of material. For them to introduce new products means a faster obsolescence of the facilities they have devoted to existing products, and it takes time for those changes to come into the

picture. Some progress is being made, however, and the industry is becoming very much interested in the processes that we have developed at Muscle Shoals. Just within the last year or so the National Fertilizer Association and the TVA have joined in a memorandum that sets up a procedure whereby they send observers into our plants and sit down with our technical people and become acquainted more intimately with the processes that we are developing.

One of the hopeful factors which may speed up the technological changes in fertilizer production which will redound to the benefit of the farmer and to the consumer of food is the interest of the Atomic Energy Commission in the extraction of uranium from phosphate rock. That will require certain processes that can be used to accomplish both purposes, which will give industry a byproduct of some value and importance. The processes that will be required for that dual purpose will produce higher-concentrate phosphate fertilizer. We are working with the Atomic Energy Commission and the United States Department of Agriculture research people with some pilot plant work in that type of project at Muscle Shoals.

As industry begins to exploit that possibility in a progressive way it will begin to adopt more of the processes TVA has developed, and fertilizers will move farther distances more economically because they will be more highly concentrated in plant food content.

Mr. JONES. So the works that are being performed at the chemical plant are not only for the advantage of the people in the area of TVA and who are served by TVA, but they have a national significance in making possible experimentation and thus developing methods by which private industry will have available to it processes to produce higher quality and better fertilizer; and, over and above that it has a national defense significance in that it is able to produce the ingredients of making war?

Mr. CLAPP. Mr. Chairman, that is an excellent summary of TVA's purpose, and in our judgment the significance of our operation and activity in this field.

If I could just cite in closing that particular phase of my presentation two illustrations of what you have just said I think it would be of benefit. We are working now on a number of promising new processes that are in the laboratory or pilot plant stage. One of them of considerable importance is a process that produces what we call nitrophosphate fertilizer in which we use nitric acid instead of phosphoric acid in the treatment of phosphate rock. One of the main reasons why this process has great promise is that for some time there has been a shortage of sulfur and sulfuric acid is the common acid used by fertilizer manufacturers in impregnating phosphate rock for fertilizer purposes. We think this new process we are working on may be picked up by private companies before we carry it into commercial scale operation.

You see, our technique is to develop an idea in the laboratory based upon the problem that the farmers encounter. Then when we develop a process that looks promising from a laboratory point of view we build a pilot plant in our shops at Muscle Shoals and operate that pilot plant to get experimental data on the feasibility and economics of the process. When we have improved it to a point where we think it has most of the bugs out of it, then we reflect in our appropriation requests a plan to build a commercial-scale unit of that process. That

is the way calcium metaphosphate has come into large-scale production at Muscle Shoals. That is the way fused tricalcium phosphate has come into production in middle Tennessee by TVA, and so on.

This particular product is proving out in the pilot plant to be very effective and economical, and if the process is picked up by industry it can help to alleviate the shortage of sulfur and thereby maintain and add to the supplies of fertilizer.

One other illustration of the use by industry of TVA experience. It is by no means unique. The TVA of course takes out patents for many of these improved processes. We have worked on some processes that improved the production of dicalcium phosphate, which was a wartime activity with us to take care of the shortage of animal feed supplement that was cut off the market because of the loss of bonemeal. We got out of that operation just as soon as we could after the war was over, which in this case was not until 1950. But at that time the Hoosac Lime Co., which is a prominent private company in the chemical field, asked for permission to use the process for commercial purposes. We furnished them with all of the technical information they wanted. Hoosac installed a phosphoric acid and dicalcium phosphate plant in Massachusetts and operated it there. Late last year they announced plans to build a complete plant, including an electric furnace for phosphorous production, in the Tennessee Valley, to be operated by a newly organized Shea Chemical Corp. that will produce about 70,000 tons of dicalcium phosphate a year.

I mentioned that development to illustrate that this laboratory serves farm problems relating to soil fertility and improved cover crops over the entire Nation by its development of improved processes which open up new markets for new products not only through the test demonstration program but also by making available to the fertilizer and chemical industries all of the technical information that our expert chemical engineers develop.

Mr. DONDERO. Do you make the benefit of those patents available to people of the country generally, the industry that might be interested?

Mr. CLAPP. That is right. All licenses that we have issued so far have been nonexclusive.

Mr. FALLON. Are there any royalties charged for the use of these patents?

Mr. CLAPP. So far we have not in any case required a royalty payment. The reason for that, if you are interested, sir, is that we want to encourage industry to use these processes widely. If we were to look at the patents as a way of earning revenue, we would begin to restrict their use and defeat the whole purpose of our research and process-development program.

Mr. FALLON. That is what I had in mind, and that is the reason why I asked the question.

Mr. DONDERO. That is the reason why I asked the question.

Mr. CLAPP. Thank you. I should like to insert at this point a brief statement on TVA's chemical-engineering work and its contribution to agriculture and industry.

(The statement is as follows:)

CHEMICAL-ENGINEERING ACTIVITIES

In 1933, the Congress entrusted the World War I national-defense plants at Muscle Shoals, Ala., to the Tennessee Valley Authority and provided for improvement of the facilities and for their use during both peacetime and wartime. In peacetime, they are used for the development of improved fertilizers and processes for their manufacture in the interest of resource development and conservation. In time of war or national emergency they are available for production of munitions and fertilizer for increased food production.

PHOSPHATE DEVELOPMENTS

At the outset, TVA adapted some of the existing facilities to the electric-furnace method for production of phosphorus. Large-scale development of the electric-furnace process was started, and a comprehensive experimental program of related research and development was launched.

Listed below are some of the results of this program:

1. Development of electric-furnace process for the production of phosphorus. About 60 percent of the requirements of the armed services for phosphorus during World War II was supplied by the TVA plant. TVA has supplied phosphorus for military requirements during the current year. TVA's peacetime research on the electric-furnace process has been a major factor not only in its own production of phosphorus but also in the ability of private companies to supply part of the military phosphorus needs. The work also has contributed importantly to the great expansion of the American phosphorus industry and to the utilization of the extensive deposits of rock phosphate in the West.

2. Development of processes for the production of phosphoric acid and concentrated superphosphate fertilizer by the electric-furnace method.

3. Development of a process for the production of calcium metaphosphate fertilizer containing about 65 percent P_2O_5.

4. Production of feed-grade dicalcium phosphate in a period which started during World War II when a serious shortage of feed-grade phosphates existed.

5. Development of improvements to the blast-furnace process for the production of phosphorus and phosphoric acid on a demonstration-plant scale.

6. Development of a process for the production of fused tricalcium phosphate fertilizer containing about 28 percent P_2O_5. The process requires no sulfuric acid and very little electric power. Development of the process is continuing in a demonstration-scale plant.

7. Development, on a pilot-plant scale, of a process for the production of potassium metaphosphate fertilizer containing about 65 percent P_2O_5 and 35 percent potash.

8. Development of a process for the continuous conversion of liquid white phosphorus to primer-grade red phosphorus and production of this material for the Army.

NITRATE DEVELOPMENTS

When the national emergency was declared in 1940, the old nitric-acid plant, which had been built in 1918, was rehabilitated and several new units were constructed for the production of grained ammonium nitrate. Beginning in 1942, anhydrous ammonia was produced in a new synthetic-ammonia plant, which became a part of the TVA chemical plant. Some of the accomplishments resulting from the research and development program associated with the ammonia, nitric acid, and ammonium-nitrate production program are as follows:

1. Shipment of ammonium-nitrate crystals to Ordnance shell-loading plants during the war.

2. Development and production of catalysts for the new synthetic-ammonia plant. Upon recommendation of the War Production Board, TVA furnished catalyst to other war plants.

3. Development, in cooperation with the United States Department of Agriculture, of a conditioning treatment for ammonium nitrate to make it suitable for use as a fertilizer when military demand for ammonium nitrate was satisfied. In addition to diverting its ammonium-nitrate production to agriculture, TVA furnished specifications and information to the War Department to aid in utilizing its surplus ammonium-nitrate facilities for relieving the critical nitrogen-fertilizer shortage.

4. Development of the continuous vacuum crystallization process for the production of ammonium-nitrate fertilizer. The process is safer and more economical than the graining process and is now being used at the TVA plant for the production of ammonium nitrate.

5. Development of a process on a pilot-plant scale for the production of diammonium phosphate fertilizer containing about 55 percent P_2O_5 and 21 percent nitrogen.

OTHER DEVELOPMENTS AND CURRENT WORK

Extensive pilot-plant work has been carried out by TVA on development of processes for the production of nitrogen-phosphorus and nitrogen-phosphorus-potash fertilizers, called nitric phosphates, and the work is continuing. The processes are of special interest at the present time because they eliminat or reduce the need for sulfuric acid.

At the request of the Atomic Energy Commission, TVA is conducting a joint study with the United States Department of Agriculture on a fertilizer project involving treatment of rock phosphate with mixtures of phosphoric and sulfuric acids. The AEC contemplates diversion of sulfuric acid from ordinary superphosphate manufacture to the production of phosphoric acid by the wet process; the phosphoric acid, after treatment for the recovery of uranium, will be turned over to ordinary superphosphate manufacturers for the production of superphosphate. The joint study will provide the technical information needed by the superphosphate manufacturers in this program.

Extensive research also is being carried out by TVA on the recovery of uranium from phosphate ores at the request of AEC.

Several other promising fertilizer processes are in various stages of development in TVA laboratories.

In accord with a memorandum of agreement with the Corps of Enigneers and the Chemical Corps, TVA, since February 1951, has furnished technical assistance in connection with an Army classified project being constructed at Muscle Shoals, Ala., adjacent to TVA's chemical plant.

The chemical-engineering facilities and skills available at Muscle Shoals have been used in connection with various other projects related to national defense. For example, during World War II, TVA produced substantial quantities of calcium carbide, which was used by private companies in the manufacture of synthetic rubber. Other wartime work included research on extracting alumina for low-grade ores or clay, on producing aluminum-silicon alloys, and on producing magnesium from olivine.

TVA actively encourages adoption of its successful developments by industry. It publishes the results of its chemical-engineering activities in recognized technical journals; 141 articles have been published and 97 related patents have been granted. TVA also is publishing a series of chemical-engineering reports, each of which comprehensively covers a major project. Technical information is continually disseminated through visits to the TVA chemical plant and by correspondents from all sections of the Nation. Inquiries are made by representatives of private industry, Government agencies, and colleges concerning TVA developments, engineering information, production activities, data on processes and equipment, and many other matters of interest. Following are a few illustrations of industry's use of TVA fertilizer research:

1. The Westvaco Chemical Division of Food Machinery & Chemical Corp. is operating three electric phosphorus-smelting furnaces in Idaho. First in the West, the furnaces are based upon TVA designs and experience.

2. The Virginia-Carolina Chemical Corp. constructed a TVA-type electric furnace for phosphorus production in Charleston, S. C.

3. Several companies have shown much interest in TVA's new rotating hearth experimental furnace. The American Agricultural Chemical Co. is building an electric phosphorus furnace with a rotating hearth in Florida.

4. Several companies were given technical information on TVA's process for making dicalcium phosphate for animal-feed supplement.

5. The Mississippi Chemical Corp., which is operating an ammonia plant in Mississippi, has been advised frequently in regard to technical details of constructing and operating an ammonia plant. A number of the company's supervisory and operating personnel have trained in the TVA plant.

Mr. CLAPP. Now, if I could summarize a few of the changes that have taken place in the Tennessee Valley as a result, in part at least, of the work of the TVA, I think that would conclude my presentation.

One of the important changes that has taken place can be seen in any tour of the Tennessee Valley. I fly over the Tennessee Valley a great deal and travel through it from time to time. If you fly over the valley, and especially during the winter months, you can see year by year the increase of areas that show green in the winter. To me, that is more important an index of what is happening to the Tennessee Valley, its land and its water resources, and possibly its people, than all of the statistics I could cite to this committee. That soil is covered all year round.

This is an area in the Tennessee Valley where the average rainfall is 51 inches a year; where the flood season of the winter months is occasioned by extremely heavy rainfall that beats heavily upon the soil. The temperature is such that the land does not freeze hard in the wintertime, and unless it is covered and protected with growth it erodes and washes away severely. That, up until some years ago, had been the history in repetitive cycles of what was happening to the soils of the Tennessee Valley.

Mr. JONES. Mr. Clapp, in that connection, is there any sense of responsibility on behalf of the TVA such as a feeling of paternalism toward the agricultural program on the farm?

Mr. CLAPP. Mr. Chairman, on the contrary, we have been criticized for not displaying a more decisive interest in the agricultural problems of the Tennessee Valley. Certainly we do not regard TVA as an agency that has a paternalistic attitude toward the agriculture of the area or the farmers of the area. The whole TVA test-demonstration program is a voluntary arrangement, where farmers agree to come into the program and devote their farms to the purposes of test-demonstration work. The actual supervision and leadership of the agricultural programs in which the test-demonstration activities are a central part is provided by the State agricultural colleges and the agricultural extension services and the county agents and their staffs in the counties. The actual determination of whether there will be such a program in a particular county or in a particular community is in the hands of the farmers who live there.

Those communities in instance after instance have beseeched the TVA not to diminish, as we are doing, the number of farms incorporated in the test-demonstration program, and not to diminish the amounts of fertilizer we are distributing for test-demonstration purposes.

TVA, on the other hand, is saying to these farm groups, "As you have acquired experience in these new practices, and as you have proven the utility and effectiveness of these new products, it behooves you as independent farmers to take more and more of the responsibility for the continuation and dissemination of these practices among yourselves." We are saying that to the States, too, and the States are responding. The farmers are responding, and TVA today is looking forward to a smaller volume of test-demonstration work still financed in part by TVA, but in diminishing amounts.

Mr. JONES. Has it been diminishing the amount of TVA participation?

Mr. CLAPP. Indeed it has. Since TVA began, 67,000 farmers have been test-demonstration participants at one time or another. The high point of the test-demonstration program was reached several years ago in the mid-forties when there were about 40,000 test-demon-

stration farmers in and outside of the Tennessee Valley. That figure has gone down rapidly in the last few years, as some of our test-demonstration programs have gone through 7-, 8-, and 9-year periods, allowing for seeing in some instances three periods of crop-rotation experience, to a point where it is down now to around 5,000 farms.

Mr. JONES. When you diminish it, is there any evidence of enthusiasm on the part of the States and local communities to assume those responsibilities themselves?

Mr. CLAPP. The States are stepping into their enlarged responsibilities very well on the whole. The difficulty, of course, is in finding adequate funds with which to maintain the kind of supervision we had helped to reimburse them for. Also, they are pressed more and more for expanded services on the part of the State.

The States of which the Tennessee Valley is a part are spending more each year upon their agricultural programs. They are providing an increasing percentage of the total made up of State funds and Federal funds.

In 1934, for example, the programs of the seven valley States devoted to resource development—minerals, agriculture, wildlife, forests, parks, conservation, and the like—constituted about 66 percent; that is, the State funds constituted about 66 percent of the total. Today State funds account for about 71 percent.

TVA activities have stimulated the efforts of State agencies and other groups concerned with agricultural development. For example, food-processing research programs in State institutions increased from 2 staff members with $10,000 worth of equipment and a budget of $18,500 in 1934 to 45 staff members with facilities worth $1,725,000 and a budget of $414,000 in 1950. The number of extension workers in the valley States has increased from 1,289 in 1934 to 2,468 in 1948, an increase proportionately greater than that for the Nation as a whole. State agencies are carrying an increasing portion of the cost of agricultural development in the valley.

If I may continue, Mr. Chairman, the agricultural activity that the TVA has helped to promote has increased cover-crop production in the Tennessee Valley. One very simple measure for example is that since this program began about 800,000 acres in the Tennessee Valley counties have been converted from row crops to pasture and other cover crops. The whole and total amount of agricultural land in the entire Tennessee Valley counties is about 13,000,000 acres. So, in this period since TVA began its work with the colleges and with the farmers in test-demonstration programs and in whole community operations, it has brought about a transfer from row crops to pasture and cover crops and close-growing grains of about one-sixteenth of the total amount of agricultural land.

The more cover crops, grains, and pastures, clovers and grasses, the more livestock and the better the use and control of water on the land. The number of cattle and calves increased from 1,493,129 to 1,761,961 over the period 1934–49. Hogs also increased from 917,599 to 1,253,792 during this period despite a decline in corn acreage. Horses and mules were the only major class of livestock that declined in number. There has been a substantial increase in dairy production in the valley between 1934 and 1949. An estimate of production, based on price adjusted sales data, indicates that the physical volume of dairy

products sold increased about 52 percent between 1939 and 1949. Then if you add to this——

Mr. DONDERO. I am not leaving because I am not interested but that is a call of the House.

Mr. CLAPP. Thank you, Mr. Dondero. If you add to the record of progress in soil improvement, the tremendous change that has taken place because of the increased use of electricity on the farms, you understand the forces behind the visual impressions you get when you travel through the valley and see the greater areas of green. Then you realize the tremendous revolution that has taken place in the agricultural economy of the area. From 3 percent of the farms electrified in 1933, the area has moved to 85 percent of all farms electrified.

These changes in agriculture reflect not only the results of the various agricultural research and demonstration activities carried out by TVA but also the fertilizer technology developments I have discussed, as well as the efforts of many agencies and groups other than TVA.

The United States Census of Agriculture data indicate a number of significant agricultural changes that have taken place in the counties in the Tennessee Valley since the beginning of the TVA program. Let me mention a few changes that reflect the improved well-being of the farm people in the valley counties.

The value of farm products sold per farm increased from $355 in 1939 to $1,188 in 1949. When the 1949 value is adjusted by the BAE's (Bureau of Agricultural Economics) index of all farm prices to the 1939 price level, the increase in value of products during the 10-year period is about 28 percent. This is, roughly estimated, the increase in physical productivity during this period.

In 1934, 42.8 percent of farm operators were tenants. In 1949, only 23.6 percent were tenants.

The number of tractors on valley farms increased from 10,565 to 57,232 between 1939 and 1949. In 1949 there was one tractor for approximately every six farms. The number of horses and mules had declined during this same period from 497,745 to 412,184.

Mr. JONES. Mr. Clapp, since we have a call of the House and there can be no objection since no one else is here except me, you will be permitted to summarize your statement and extend it immediately following the questions of Mr. Curran.

Mr. CLAPP. Thank you, Mr. Chairman. This is the first time TVA representatives have appeared before this committee. In concluding this report, therefore, I want the committee to remember that I am reporting in this brief summary on 18 years' history of an agency new in type when it was created, and specifically designed to try out innovations in government administration. What we have learned may be useful elsewhere. Our methods in whole or in part may be adapted to other regions and different problems. But whether or not the Missouri Valley or the Columbia Valley takes advantage of the successful demonstration of the TVA in the Tennessee Valley there is already a substantial list of contributions TVA has made to public administration. I should like to list with very brief comment a few examples of what I have in mind. In a number of important ways the TVA has pioneered, experimented, and developed new methods. (See list at end of this statement.)

I am proud, as any person associated with TVA from the beginning must be proud, of the record we lay before you. I hope the committee will understand that it is a pride deeply touched with appreciation that we in TVA have had the opportunity to do our work under a statute so wisely designed to fit the requirements of our job. Congress deliberately, it appears, tried the experiment of giving to TVA, a public corporation, enough of the flexibility characteristic of modern business management so that we could be held accountable for results. We have been able to avoid delays, to reduce red tape, to go forward in the kind of climate which helps men do their best. With freedom from many of the traditional restrictions of bureaucracy, we acknowledge complete accountability. We feel deeply responsible to report to this committee the use we have made of the freedom an earlier Congress gave us. For just as the area of TVA's responsibilities cuts across the accustomed boundaries of Federal departmental jurisdiction, and we were told to look at the resources of the region as a whole, so TVA's managerial responsibilities were made more nearly complete.

As the committee knows, TVA was specifically exempted from the classified civil service. At the same time the Congress made certain that merit alone would prevail in appointments by placing a specific mandate in the statute and specifying the penalty of summary removal if political considerations prevailed in the selection of a single employee.

Within that authorization the Board of TVA has selected the men and women who have accomplished this tremendous construction job. I reported to you that over the 18-year period estimates have been overrun by only a little more than 3 percent, and that percentage is almost entirely attributable to the defense emergency which required shortened construction schedules. We have conducted substantially all our construction program by what is called force account. That means that the men who have driven the bulldozers, manned the engines, operated the pumps, have been employees of TVA just as the experts who calculate stream flow, the engineers who design the structures, the lawyers who negotiate the contracts, are TVA employees. The same management has been responsible for the location, planning, design, construction, and operation of these structures. For us that has been a magnificent opportunity. Our men have broken records in construction time. They have broken records in accident prevention. Their designs have won prizes again and again in national and international contests. And when these dams and structures are completed and begin to serve the Nation they are not inscribed as monuments to the builders. Instead each structure carries the simple statement: "Built for the people of the United States."

We deeply believe that the test of the success of all our work lies in what happens to the people of the area. We believe that it is fine to build magnificent dams honestly and efficiently, to produce the fertilizer that results in rolling pastures and the beginning of a changed farm economy in the South. Increased commerce on the river and a stimulating rise in the use of electricity are heartening signs for hard-working men to see as a result of their efforts. But we know that all these are not ends in themselves but only tools by which people achieve a better standard of living in their homes, in their local institutions, and in their private enterprises. Demonstrably, the land in

the Tennessee Valley is more fertile because of TVA activities. Clearly some perils have been abated, some opportunities for the enrichment of life created. The area of economic choice has been expanded. We are willing that TVA's projects and its methods be judged by a more exacting standard for a Federal agency to meet. We have tried and we believe that we have so conducted our operations that State and local governments have been strengthened rather than weakened, that dependence upon the Central Government is less rather than greater because of TVA, and that the sinews of democracy are stronger in the Southeast because the Federal Government undertook this program of integrated resource development in the Tennessee River Basin in 1933.

In the future of TVA's work in the valley emphasis on these high objectives will be maintained.

METHODS DEVELOPED BY TVA WHICH HAVE BEEN ADOPTED BY OTHER AGENCIES

Personnel administration

Relations with employee unions: The 1940 general agreement between TVA and Tennessee Valley Trades and Labor Council was used as a model by the Bonneville Power Administration in its agreement with the Columbia Trades Council.

TVA's labor-management relations were reported on and commended by Joint Committee on Labor-Management Relations (S. Rept. 372, 81st Cong., 1st sess.).

Recruiting and examining: In TVA, administrative and professional people who must supervise the people being hired participate in recruitment and examining. This participation is to some extent provided for in the Civil Service Commission's agency examining board program, begun in 1946. It is also used by the Commission in connection with "selective certification," which it began to use about the same time.

TVA uses category ratings for applicants (outstanding, well-qualified, qualified) rather than percentage ratings. The Civil Service Commission is now recommending category ratings for certain classes of jobs.

Position classification: In 1945, TVA reduced the number of grades in its position classification plan in order to make it more understandable and simple to administer. The Civil Service Commission, in its 1947 annual report, recommended similar action for the Federal service generally. This recommendation was adopted in the Classification Act of 1949.

Service review: TVA's service review plan, adopted in 1945, emphasizes helping employees to do a better job; emphasizes ratings of performance of each part of a job rather than ratings of employee characteristics. These basic ideas were adopted for the Federal service generally in the Performance Rating Act of 1950.

Reduction in force: TVA emphasizes qualifications for remaining work, rather than performance in past work. The Hoover Commission emphasized the same thing.

Responsibility of supervisor for personnel administration: TVA has emphasized this from the beginning. The Civil Service Com-

mission had the idea written into Executive Order 9830, February 1947, Amending the Civil Service Rules and Providing for Federal Personnel Administration. The Commission has made some progress since then in revising its methods and procedures to make it possible to work out the idea in practice.

Promotion policy: TVA has had a written policy on promotion—encouraging career development—since 1945. Similar policy was recommended by the Hoover Commission and was recently adopted by the Civil Service Commission.

Executive development program: TVA's examining standards have always recognized the close interrelation of administration and the subject to which administration is applied. They allow people to move from technical to administrative work and from one type of administrative work to another. This is basically the idea behind the Civil Service Commission's executive development program. That is, the Commission has waived certain of its examining standards to permit such transfers.

Land acquisition procedures and methods

In 1939 TVA loaned personnel to Bonneville Power Administration to set up a land-acquisition program, and TVA employees similarly aided the Santee-Cooper project in South Carolina. Assistance was also given to the Department of the Army in acquiring land for the Oak Ridge atomic-energy plant and for projects in the Cumberland Valley.

Automotive engineering

TVA automotive engineers have served for years on special committees of the Society of Automotive Engineers, and on the Interdepartmental Motor Equipment Committee, sponsored by the Bureau of the Budget.

During the war, techniques devised by TVA automotive engineers for reclaiming outworn or broken parts or equipment in garages and small repair shops were borrowed by the Office of Defense Transportation and recommended for wartime operation to other fleet operators throughout the Nation. TVA's method for refacing outworn engine valves was adopted by the Army as a standard maintenance practice.

Safety

Practices developed for the promotion of safety have been adopted by other organizations in a number of instances. For example: The Atomic Energy Commission has adopted TVA's practices in regard to grounding electrical equipment. The Columbia Municipal Electric System, the Duck River Cooperative, the Chattanooga Power Board, and the Nashville Power Board have adopted the practices used in TVA of using Primacord for pole-hole blasting in order to remove the electric detonator from the area in which it could be detonated by induced and stray currents. The Associated Indemnity Corp. of Dallas, Tex., adopted TVA's reservoir clearance safety program for logging operations conducted by its policyholders, after seeing it in operation in TVA.

Electric cooperative organizations

TVA encouraged and assisted in the organization of electric distribution cooperatives which form a model for the REA cooperatives all over the country.

Office methods

Some 2,000 inquiries from other governmental agencies and private concerns during the past 10 years attest to others' interest in TVA's office methods, standards, and operating techniques. Among the documents most frequently requested are the Guide to Office Methods Study, the Manual of Files Operation Standards, the Manual of Standard Secretarial Practice, the Records Program of the TVA, the Administrative Release System of the TVA, the Manual of Office Reproduction Standards, and the Manual on Scheduling and Disposal of Records. Of the last-mentioned document, the National Archives commented that they—

> think it tops anything that has been attempted in this line hitherto by any Government agency, not omitting the National Archives.

In 1943 the Navy Department borrowed one of TVA's analysts to assist in files work, and the War Department had the loan of two analysts to aid in the development of control staffs. In 1942, the TVA film Motion Study Applied to Letter Indexing was used in training work with war-industries personnel, particularly airplane-manufacturing firms.

Malaria control techniques

Advances resulting from the research and development activities of TVA in malaria control have been widely accepted elsewhere. TVA practices in preparation of reservoirs before storage begins have been adopted, among others, by the United States Army Corps of Engineers and the South Carolina Public Service Authority. State regulations or laws concerning impounding of water in reservoirs have been established or strengthened on the basis of reservoir preparation techniques developed by TVA. Many agencies have used information on new application techniques and larvicidal formulae developed by TVA. TVA has equipped airplanes for distribution of DDT larvicides for the United States Public Health Service for use in this country and the Philippines, for UNRRA in Greece and Yugoslavia, and, through the State Department, for the Egyptian Government. Blueprints and drawings have been supplied scores of private companies and individuals interested in application of insecticides by aircraft.

Demountable housing

TVA developed demountable, prefabricated housing units for use at construction projects in isolated mountain areas. This development proved valuable in meeting emergency housing needs during World War II. Designs were used at atomic-energy projects at Oak Ridge, Tenn., and at Hanford, Wash. They were also used by the British Ministry of Supply for the construction of housing for the British emergency housing program.

99217—52—pt. 3——19

Radio rain and stream gages

TVA has developed unique rainfall and stream gages to obtain information from remote, unsettled areas. Information concerning the construction and operation of the gages has been made available to many organizations, including the State of Pennsylvania, the North Scotland Hydroelectric Board, the Union Electric Co. of St. Louis, Mo., and a number of division offices of the Corps of Engineers, United States Army. The USGS is now using several of these instruments in the Denver area.

Weather Bureau

In 1939, TVA entered into an agreement with the Weather Bureau under which the latter provides more frequent and more detailed weather forecasts, including quantitative estimates of rainfall in seven subdivisions of the valley 36 hours or more in advance. This was a pioneer service in this country. At least two forecasts are provided daily, and three or more during the flood season. The Weather Bureau now is providing also an outlook on the weather 5 days in advance and a forecast of prospective weather conditions a month in advance.

Topographic mapping techniques

TVA's contribution to mapping was made possible by its pioneering in production with the multiplex machine, operating on the stereopticon principle to translate aerial photographs into topographic maps. The Army Map Service is now using techniques developed through TVA's experience with the multiplex machine.

Soil survey techniques

TVA, in cooperation with the United States Soil Service, has developed soil survey techniques in classification of soils in terms of suitability of use. These are now used in soil survey work throughout the country.

Wildlife refuges

For the first time in the country, multiple-use of game preserves were tested in the valley. Formerly such preserves were used solely as refuges. In the valley, refuge lands suited to agriculture were sharecropped, providing both income to farmers and food for wild fowl. Timber sales were made where conditions warranted. Boat docks were developed where locations suited such establishments. Regulated hunting and trapping were permitted on some of the refuges. The dewatering of large areas in summer for malaria control was found beneficial to wildlife management. The idea that fluctuating water levels spoiled the use of multiple-purpose reservoirs as wildlife refuges has been thoroughly disproved. The United States Fish and Wildlife Service is putting the findings in the Tennessee Valley into practice in the Santee-Cooper area, in South Carolina, and elsewhere.

Effect of reservoir system on fishing

In the early days of TVA it was freely predicted that the reservoirs would become "biological deserts." On the contrary, TVA investigations showed that the lakes would support year around fishing. These studies have led to elimination by State conservation agencies

of "closed fishing seasons" on TVA lakes, to discontinuance of expensive hatchery operations for stocking the lakes, and to legalization of nets for commercial fishing on the Alabama portions of TVA reservoirs.

Forest survey techniques

Measuring the drain from forest stands by a sample plot method was developed and first used extensively by TVA. It was later tested by the United States Forest Service and adopted to replace or supplement the old method of contacting wood users.

Accounting

The TVA receives frequent requests from other agencies regarding fiscal methods and procedures. It is difficult to assess to what extent any of these methods may be adopted by others. TVA's cost accounting system, however, was described by Mr. T. Coleman Andrews, former director of the Corporation Audits Division of the General Accounting Office, in testimony before a congressional committee: "TVA probably has the finest accounting system in the entire Government and probably one of the best in the world. It is an excellent system. There is no private enterprise in this country that has any better."

Mr. JONES. We are certainly grateful to you, Mr. Clapp, and the members of your staff and are sorry for the inconvenience and delay which you have experienced, which has occasioned your attendance at the hearings, for which I am not responsible.

Mr. CLAPP. It has been a pleasure to me to be able to attend.

Mr. CURRAN. I realize the question is not one you can answer in full for it pertains to several agencies. The Corps of Engineers in appearing before the Appropriations Committee of the House referred to three projects on the Cumberland River: Dale Hollow, Center Hill, and Wolf Creek Dams. When asked about the power revenues from those they answered that the power benefits—not the revenues but the power benefits—from Dale Hollow would amount to $1,352,000 annually; from Center Hill, $3,515,000 annually; and, from Wolf Creek, $6,673,000 annually, or a total of over $11,500,000. At the same time there is a contract between TVA and the Department of the Interior whereby the TVA has agreed to buy all of that energy from those projects and according to the 1949 annual report of TVA the total annual amount that is expected to be paid is $3,500,000.

I wonder if there is any change in that agreement to indicate that there is going to be a greater amount paid than shows in your 1949 annual report?

Mr. CLAPP. Mr. Curran, there has been no change in the agreement. Whether the amounts in 1950 and 1951 differ from the 1949 payment I do not know offhand, but I can supply the figures. My guess is that they would be greater to the extent that more capacity has gone on the line from those dams.

Mr. CURRAN. That is the contract figure. It is not the actual figure. The contract figure estimates $3,500,000 with the full installation.

Mr. CLAPP. I see.

Mr. CURRAN. So the subcommitte and other members have received an unbalanced picture that the Treasury is going to have about three times as much return as that actually provided. There is no change in the agreement?

Mr. CLAPP. I am sure there is no change in the agreement.

We are not advised of the precise basis on which the Corps of Engineers calculated that the power benefits of these Cumberland projects would reach $11,000,000. The Corps' earlier reports on the development included a statement of power benefits which was based on assumed alternative costs of providing the power from steam plants owned by private power companies. There are, of course, many benefits when hydroelectric power is developed as a part of multi-purpose projects. A valuable resource is utilized which would otherwise be wasted. The total amount of energy available to the people is increased.

If the principles employed in estimating power benefits were similar to those used in calculating flood control and navigation benefits, the alternative costs to consumers of securing the power from another source would provide a basis for measurement. Flood control benefits are mainly savings or damages averted to property owners and people living in the areas to be protected. Navigation benefits are benefits directly realized by shippers. In similar fashion the direct benefits of the Federal Government's investment in power facilities would be realized by the consumers of that power.

Revenues are not the same as benefits. In the case of projects on the Cumberland, the revenues—that is, the amount TVA pays for the power—come through TVA from the consumers of that power. Under the Flood Control Act of 1944, power-marketing principles similar to those established in the TVA Act of 1933 require the power to be sold at the lowest practicable rates in order to encourage widespread use of power by the people in the area served. Benefits include, among other things, consumer savings. While revenues received from consumers must be adequate to cover costs, under the principles laid down in the Flood Control Act of 1944 and the TVA Act of 1933 they need not and should not equal the estimated benefits.

Mr. JONES. You will supply a statement for the record?

Mr. CLAPP. We will be glad to.

(The following statement summarizes the scope and results of some TVA activities not discussed earlier in the record of the hearing:)

INDUSTRIAL DEVELOPMENT

The TVA area has more than kept pace with the Nation's large industrial expansion of recent years. Within the last two decades, industry has grown at a faster rate than in either the Southeast or the Nation as a whole. Over the period from 1929 to 1950, manufacturing income in the 201 counties of the valley and the power service area outside the valley has increased by 346 percent as against 309 percent in the Southeast and only 201 percent in the Nation. As a result of the gains in manufacturing, the region has shifted from a predominantly agricultural area to an important and expanding industrial area.

Manufacturing employment as well as income has also expanded sharply in the valley. In 1950, more than 380,000 workers were employed in valley manufacturing, an increase of 72 percent over the 1929 prosperity level, as compared to a gain of 62 percent in the Southeast and only 41 percent in the Nation over the same period. Already, income in manufacturing exceeds total agricultural income in the region by a wide margin. And within the next decade, if present employment trends continue, employment in manufacturing, as well as income, will exceed that in agriculture.

TVA has aided and encouraged industrial business development in the Tennessee Valley through a broad program of resource development. Industrial development in the valley has been stimulated by an adequate and expanding

supply of low-cost TVA electricity; by increased raw materials resulting from programs of agricultural and forest-resource development; by the availability of water transportation through the development of a navigable channel on the Tennessee River; through improved knowledge on the availability and uses of the mineral resources of the region resulting from a program of mineral research and development; through improved recreation facilities which have made the area more attractive to both management and labor in industry; through chemical research at TVA's Muscle Shoals operations which has made advanced industrial technology available; through TVA's labor training and employment program which has added skills and improved the labor resource of the valley; and through planning assistance, Government research, and industrial economics programs which have encouraged the development of strong, well-staffed State and local planning agencies and aided communities in improving the quality of community facilities—an important factor in attracting industries.

But resource development activities, impressive as they have been, have not been able to do the job of industrial development alone. They have improved the attraction of resources and opened up new opportunities in the region. But the important steps of actually starting new industries and of influencing the location decisions of businessmen have been the responsibility and accomplishment of the State and local agencies in the region.

The developments, with others in agriculture, forestry and the like, have contributed signficantly toward improving the welfare of the people of the Tennessee Valley area. In 1929, average per capita income in the combined Tennessee Valley watershed and TVA power service area was only 44 percent of the national average. By 1950, the more rapid gains of this region had raised per capita income levels to 58 percent of the national average.

FORESTRY

Forest and woodlands comprise over half of the valley area. Prior to 1933, forestry in the Tennessee Valley received little emphasis. While each valley State had a forestry division or department, they were inadequately financed and understaffed. Altogether, these seven States employed only 36 foresters; their forestry budgets totaled only $515,800; their forestry activities were limited almost entirely to fire control. There was little or no public interest or understanding of forest-resource conservation and development. Forest-land owners and forest industries were taking no active part.

TVA's efforts in forest development have been directed toward promoting public interest and stimulating increased activity on the part of local agencies, organizations, and industries. Much progress has been made toward a more general understanding of the importance of forests to the economy of the region. Public support of forestry has increased to the point where the valley States' forestry agencies now have a combined budget of over $5,000,000; they employ more than 300 foresters. A recent survey of forest products industries shows 42 percent of them taking some active part in forest-resource development. Here are indications of progress in the various phases of forest development in the Tennessee Valley.

Forest fire protection is a problem of high priority, and much has been done to reduce the number of fires and the acreage affected. No one knows for sure how much forest land was burned in the valley prior to 1933. There were no records because on over half of the forest land no attempt was made at protection. According to the best estimates, 10,000 forest fires occurred in a single year; they burned an average of 700,000 acres.

Today, 80 percent of the forest land in the valley is protected. Furthermore, the quality of protection has improved. Forty percent of the forest land is now adequately protected; on another 25 percent, protection is nearly adequate; on another 15 percent, there is some, but inadequate, protection. The average annual burn has been cut to about 150,000 acres.

The job ahead is to extend protection to the 3 million acres not yet protected and to increase the quality of protection to the point where fire is no longer an obstacle to timber production and watershed improvement. This means reducing the annual burn to less than 50,000 acres.

Reforestation is proceeding steadily. In 1933, there were 1½ million acres of land in the valley in need of reforestation. This estimate, made by foresters and agriculturists, included eroded and abandoned farm land and forest land that had been cut and burned beyond the hope of natural recovery. As of that time, only 1,200 acres had been reforested.

Today, trees have been planted on close to 200,000 acres, and the work is progressing at the rate of about 15,000 acres a year. TVA produces the trees that are planted in the valley. State forestry and agricultural agencies do most of the educational work needed to promote the reforestation idea among landowners. The area planted in the valley has increased 145 times since 1933; in the South as a whole there has been a thirty-two-fold increase; in the United States; a threefold increase.

The reforestation job in the valley is still far from done. Over a million acres of potential forest land still lack the growing stock essential to full timber production and adequate watershed protection.

Sustained timber production is beginning to be understood and practiced. Forest land should be so managed as to produce continuously a maximum of wood and other forest products without limiting or destroying watershed protection values. In the valley, this means raising the production level of the average forest acre from the present 100 board feet per acre per year to 300 or more board feet per acre. To bring this about, forest landowners must learn and apply the basic principles of sustained-yield forest management. Growing stock must be built up and periodic harvests must be limited to the net growth accumulated during the period.

As recently as 1941 there were no examples of this kind of forest management on private lands in the valley. Now there are over 300 demonstrations of sustained-yield forest management, set up jointly by TVA and State forestry and agricultural agencies. The area involved is close to half a million acres. These demonstrations, plus "tree farms," plus public lands, add up to about 3.2 million acres on the road to sustained yield. The goal is 14 million acres.

In 1933, State forestry agencies were concerned almost entirely with fire control. Now all of them are becoming active in the forest-management field. Agricultural extension workers are also taking more interest in forestry. There were no foresters on the staffs of State agricultural experiment stations in 1933; today, there are 15 or more working on farm-forestry problems.

Better utilization of forest products is the payoff in these programs. In 1932, there were 2,800 forest-products industries in the Tennessee Valley; now there are 6,600. The number of employees in these industries has increased from 44,000 to 57,500. Wages have gone up from $32,400,000 to $65,400,000 a year. In 1949, the Valley States manufactured 35 percent of all the hardwood lumber and 19 percent of all the softwood lumber produced in the United States.

Until very recently there were no small treating plants in the valley where farmers could buy treated fence posts, or have posts treated. Most of them had to use nondurable wood for posts, and without chemical treatment this meant frequent replacement. Following an investigation and demonstration program led by TVA, some 25 small treating plants are now in operation and interest is increasing.

TVA and the United States Forest Products Laboratory are cooperating in research on the hydrolysis of hardwood waste.

Today the value of forest products turned out annually amounts to over $200,000,000; but it has been estimated that the value can be increased to $900,000,000 a year.

PUBLIC HEALTH

TVA has made notable contributions toward the solution of public-health problems related to construction and operation of its multipurpose reservoir system. The most significant contributions have been in the fields of malaria control and stream sanitation.

The incidence of malaria in areas around TVA lakes has been sampled annually since 1934 in places where expectation of finding cases was greatest. In 1934, 6,720 blood samples were examined and 28.4 percent were found to contain malaria parasites. In one area the percentage was as high as 65 percent. Because the dam construction program increased the potential malaria hazard, a malaria-control program was undertaken. Since 1934, the trend in malaria cases determined by TVA surveys has been steadily downward.

In 1947, when 6,158 slides were examined for malaria parasites, less than one one-hundredth of 1 percent of the positive slides found could be attributed to cases of the disease originating within the United States. Since 1948, no positive slides have been found.

TVA has pioneered in the development of effective and economical techniques for malaria control. While program effectiveness has been increasing, the annual operating costs have declined. Many of the methods developed by TVA have been adopted by others.

Regulatory authority in stream-pollution control rests with the States and their subdivisions. They are assisted in interstate problems or with technical problems by agencies of the Federal Government. TVA has participated extensively in fact-finding surveys which must precede any program of stream-pollution abatement.

Since 1936, when TVA was asked by the valley State health officers to begin detailed studies in stream sanitation, a great deal of basic information has been accumulated. Preimpoundment and postimpoundment studies of pollution entering the Tennessee River have shown that at present stream pollution is a serious problem only in certain sections of the Tennessee Basin. In these sections, pollution seriously interferes with many uses of water.

TVA, in its stream sanitation investigations, has identified eight industrial and two municipal sources which are responsible for a major portion of pollution affecting the streams beyond the immediate point of discharge. Estimates indicates that $13 to $16 million capital investment would be required to abate these 10 identified sources of pollution. If this investment were made, further pollution abatement in the valley would consist almost entirely of correction of a series of local problems, and prevention could then become the keynote of programs.

TVA has established a policy to develop, operate, and manage TVA facilities so as to provide additional benefits where this can be done without undue loss of primary emphasis on navigation, flood control, and generation of electric power. The net effect of TVA water-control operations has undoubtedly been an improvement in water quality and an increase in quantity during periods of low surface runoff.

In 1936, not one of the valley States had an organized stream-pollution-control program. Now, six of the States have developed such programs administered by special boards or commissions. These boards are authorized to establish water quality standards and exercise general supervision over administration and enforcement of water-pollution laws. The board in Tennessee has classified its streams according to present and foreseeable uses of their waters and announced the amount of treatment necessary at most places to bring the streams back into condition for reasonably balanced usage. North Carolina and Alabama are working on classification of their streams.

Further evidence of popular interest in and control of stream pollution is disclosed by the reported expenditure in 1935 by six valley States of $59,000 and 20 man-years of work on the problem; in 1950, the same States are reported to have spent an estimated $366,000 and devoted about 61 man-years to the work. Encouraging also is the fact that towns in which live two-thirds of the population served by sewers now have plans for sewage treatment plants. In addition, at least 15 large industrial plants in the valley are conducting work on waste disposal and studying pollution effects.

RECREATION, FISH, AND WILDLIFE

The Tennessee Valley has always had an excellent recreation climate, much scenic beauty, many historic sites, and a good location in relation to American travel, but was deficient in water resources. TVA construction added to these recreation resources and attractions 10,000 miles of water front around 600,000 acres of water. The dams are now major points of visitor interest and the lakes support sport fishing.

The value of recreation improvements and equipment along TVA lakes is over $31 million; $9.4 million of this amount is the value of 18,000 recreation boats on the lakes. These are private or non-Federal investments. Not more than 600 recreation craft were on the Tennessee River system in 1933. Person-day recreation use of TVA lakes totals 18.5 million a year. One lake receives over 3 million person-days use a year and six other lakes receive over a million a year. In addition to recreation use of the lakes, almost 6 million visits a year are made to the dams. Recreation use and development of TVA lake shores has more than doubled during the last 5 years although only a small percentage of shore line has been added by new impoundments. Use of the recreation resources is occurring without impairment of TVA's primary responsibilities for flood control, navigation, and production of electric power.

To stimulate the wider use of the recreation resources inherent in the TVA lakes, TVA operated for a number of years several demonstration parks. These now have been turned over to State agencies or private interests and TVA has no direct recreation operations.

Public agencies and private interests together have assumed the responsibility for recreation development and use of TVA lakes. Alabama, Kentucky, North Carolina, and Tennessee operate 12 State parks on the lakes. These parks total 14,500 acres and improvements within them are valued at $3.9 million. The 38 county and municipal parks on TVA lakes include 3,000 acres and the improvements in them are now valued at $800,000. In 1951, the person-day use of the State parks was 1.7 million and of the county parks over 1.1 million. The United States Fish and Wildlife Service operates three game refuge areas (101,000 acres, land and water) and State departments of conservation operate four game and waterfowl areas (65,000 acres, land and water).

Private interests have been responsible for the major portion of the recreation developments on TVA lakes. Over 200 commercial recreation businesses dot the shore lines. These range from modest boat docks and fishing camps to excellent resorts. One of the latter is the largest single recreation operation in the Tennessee Valley. Gross income from these commercial operations exceeded $4,300,000 in 1951. Private use of lake-front property for summer residences is increasing. The number of these has increased from 588 valued at $2.1 million in 1947 to 1,696 valued at $7.8 million in 1951. Other significant recreation uses include group camping and private clubs.

About one-half of the person-day recreation use of TVA lakes occurs at undeveloped areas. This use is made by picnickers, fishermen, and local people seeking a day's outing. Small areas at bridge abutments and at old road entrances to the lakes have been reserved for public access and bear the brunt of this heavy use. In the aggregate these areas provide a most important recreation service.

Sport fishing has multiplied 100 times on storage reservoirs on tributary streams and 25 times on mainstream reservoirs, compared with the fishing on the same stretches of the river before the dams were built. The total sports catch of fish on TVA reservoirs now exceeds 7 million pounds a year and generates business valued at $10 million. Commercial fishermen take 2.5 million pounds of nongame fish and 10,000 tons of mussel shells from the lakes annually, with revenues of nearly $1,000,000.

TVA has conducted biological studies of its reservoirs to discover means of harmonizing fish and wildlife development with the major purposes of the reservoirs. Findings and recommendations are made available to State fish and game authorities. TVA research, for example, showed the feasibility of discarding closed seasons for fishing and was the basis for State action in removing the restrictions. Annual fish catches were doubled without damage to the fish population.

The attraction of TVA reservoirs and the establishment of game refuges have greatly increased the population of waterfowl. In 1933 there were no waterfowl refuges in the valley, but thousands of ducks and geese now spend their winters in the Tennessee Valley.

Since 1933, the date of the beginning of TVA's multipurpose reservoir construction program, the recreation travel business in the Tennessee Valley and the Valley States has developed into an industry estimated in the hundreds of millions of dollars. Recreation use of TVA lakes has been a definite factor in the growth of this new industry.

EXPANSION OF RESOURCE AGENCIES AND ACTIVITIES

The period of TVA operation has seen State and local governments in the area, as well as private and semipublic agencies, organize to promote more effectively the use of the region's resources. In 1933 no State had a firmly established planning and development agency. Each of the seven States now has an organization engaged in such activity. Seventy local governments in the valley portion of the seven States now have local planning commissions. Three of the seven States have organized departments of conservation since 1933 and State functions in the field have expanded greatly. Administrative agencies for developing State parks carry on an almost totally new activity for most of the States. Public attendance at State parks has increased from less than half a million in 1936 to over 6 million in 1950. The universities in the area have organized themselves to participate cooperatively in continuing research in such fields as income analyses, administration of resources, and other subjects related to the improvement of the regional economy.

Especially noteworthy has been the expansion of previously existing program activities in the developmental field. The greatly increased emphasis on agri-

cultural engineering, research, and extension account for a major portion of the increased expenditure for all resource activities. Increased expenditures by forestry agencies have resulted in doubling of the area given fire protection as well as new attention to forest management and utilization. Habitat studies, game-restoration projects, and minerals research are reflected in sharp expenditure increases by wildlife and minerals agencies.

The stronger fiscal position of the States is indicated by the fact that total State tax revenues for the seven States have increased nearly seven times in the past two decades. The States has been fit to devote a proportionate share of these increased revenues to State-financed programs of resource development. The expenditure of State funds (excluding Federal grants) for major programs in the resource field by the seven Valley States for the first year of TVA operation and for the most recent year for which complete data were readily available are as follows:

	1934	1949
Agriculture	$3,987,000	$18,574,000
Forestry	216,000	3,534,000
Parks	40,000	1,568,000
Wildlife	1,151,000	5,153,000
Water and minerals	165,000	965,000
Planning and development	37,000	888,000
Total	5,596,000	30,682,000

The list which follows, admittedly incomplete, indicates that many new organizations directly or indirectly concerned with resource development have been established in the Tennessee Valley region since 1933. Some are local, some State, and some regional; some are public and some private—but all have a common objective in the development of some facet of the area's economic and social life. Their very existence and continuing activity are convincing evidence that development of the region since 1933 rests on a broad basis of participation.

SOME RESEARCH AND DEVELOPMENT BODIES (PUBLIC AND PRIVATE), WHICH HAVE BEEN ORGANIZED IN THE TENNESSEE VALLEY REGION SINCE CREATION OF TVA IN 1933 [1]

Stream sanitation (State governments):
- Alabama—Water Improvement Advisory Commission.
- Georgia—Water Improvement Advisory Committee.
- Kentucky—Water Pollution Control Commission.
- North Carolina—State Stream Sanitation Committee.
- Tennessee—Stream Pollution Control Board.
- Virginia—State Water Control Board.

Social science research and service (university):
- Alabama—Bureau of Public Administration.
- Georgia—Bureau of Public Administration.
- Kentucky—Bureau of Community Services.
- Mississippi—Bureau of Public Administration, Social Science Research Center
- Tennessee—Bureau of Public Administration, Bureau for Sociological Research.
- Vanderbilt—Institute for Research and Training in Social Sciences.
- Tuskegee—Rural Life Council.

Forestry and wildlife:
- Alabama Forestry Council.
- Virginia Forests, Inc.
- Mississippi Forestry Council.
- Alabama Forest Products Association.
- Tennessee Timber Growers Association.
- Mississippi Forest and Chemurgic Association.
- Forest Farmers (regional).
- Tennessee Conservation League.
- Keep Green Association (one in each of the 7 States).
- Southern Forest Tree Improvement Committee.
- Scores of sportsmen's clubs.

[1] Unless otherwise stated, local organizations listed are within the Tennessee Valley; State and regional organizations, on the other hand, generally extend outside the valley.

State conservation agencies:
- Departments of Conservation—Alabama, Tennessee, Kentucky.
- Parks Divisions—Alabama, Georgia, Mississippi, North Carolina, Tennessee. (Many aspects of the work of the State departments of conservation and of separate agencies represent new functions of State government since 1933.)

Power Distribution (TVA Power Service area):
- Tennessee Valley Public Power Association.
- State Rural Electric Cooperative Association (one in each valley State).
- 95 municipal power boards (includes about 15 in operation before 1933).
- 50 power cooperatives.

Public health:
- Department of Preventive Medicine, University of Tennessee (malaria research).
- 213 county health units (valley States, excluding Kentucky).

Libraries: 26 regional libraries (seven valley States).

Minerals: Asheville Minerals Research Laboratory.

State planning agencies:
- Alabama State Planning Board
- Georgia Department of Commerce.
- Kentucky Agricultural and Industrial Development Board.
- Mississippi Agricultural and Industrial Development Board.
- Division of Industrial Development, North Carolina State Department of Conservation.
- Tennessee State Planning Commission.

Local planning agencies: 69 city and county planning agencies—in the watershed

Regional-wide groups of official agencies: Southern Association of State Planning and Development Agencies

Graduate schools in planning:
- Department of City and Regional Planning, University of North Carolina
- Department of City and Regional Planning, Georgia Institute of Technology

Agriculture:
- County erosion control association (118)
- Seven federated purchasing cooperatives
- Valley States Conference of Land Grant Colleges
- Community improvement clubs (related in origin to TVA test-demonstration farm activities—700 in Tennessee and other valley States also developing programs)

Recreation and tourist:
- Tennessee Tourist and Development Association
- Western North Carolina Tourist Association
- Tri-State Highland Association
- Major tourist bureaus (examples: Knoxville, Chattanooga)

Area development organizations:
- Western North Carolina Associated Communities
- North Alabama Associates
- North Mississippi Industrial Development Association
- West Kentucky Development Association
- Washington County (Va.) Development Association

Industrial research laboratories and facilities (seven valley States):
- Industrial Research Institute (University of Chattanooga)
- Auburn Research Foundation (Alabama Polytechnic Institute)
- Georgia Tech Research Institute, Georgia Institute of Technology
- Kentucky Research Foundation, University of Kentucky

Other:
- Southern Regional Education Board
- Committee on Southern Regional Studies and Education
- Committees of the South (of National Planning Association)
- Tennessee Municipal Technical Advisory Service
- Mississippi Economic Council

Mr. JONES. There will without objection be placed in the record at pertinent places several statements that have been received during the course of these hearings. We will adjourn subject to the call of the Chair.

NEW HAMPSHIRE ELECTRIC COOPERATIVE, INC.,
Jaffrey, N. H., April 17, 1952.

HON. ROBERT E. JONES, JR.,
Chairman, Subcommittee To Study Civil Works,
House of Representatives, Washington, D. C.

DEAR CONGRESSMAN JONES: It is my understanding that on or about April 22 your committee is to afford an opportunity for statements to be made by non-Federal interests relative to the purposes in view by the committee. While it will be impossible for me to be present I beg leave to file the following statement.

I have read with care the Statement of the Responsibilities of the committee and will confine myself to the limits set therein. I also have read and studied the report A Water Policy for the American People as well as volume 2 of the same committee report entitled "Ten Rivers in America's Future."

As president of New Hampshire Electric Cooperative, Inc., and its wholly owned subsidiary, White Mountain Power Co., which together own somewhat more than 2,200 miles of electric line serving more than 14,000 New Hampshire locations, I am primarily interested in the question of securing adequate electric power at the lowest price consistent with financial soundness. And as chairman of the power committee of the Northeastern Electric Cooperative Association, comprising 14 cooperatives in Maine, New Hampshire, Vermont, and New York, my attention has been directed to power problems outside my own area.

For some 14 years now the question of flood-control dams has been before the people of this area; and, as a citizen who has suffered damage from floods, I have taken as active an interest as possible in the problems presented. While of course our New Hampshire problems in this respect are minor as compared with those of other sections of the United States, my study of the local situation has resulted in creation of an interest which has led me to study the whole question as applied to the country at large. And as a member of the New Hampshire House of Representatives for 11 terms, from time to time it has become my duty to inform myself of the local situation, which entailed a study of projects and problems elsewhere.

Having noted at first-hand here in New Hampshire the wide variation between the conclusions of the Corps of Army Engineers and the Federal Power Commission in connection with the control of the Merrimack River; and having learned of similar diversions of policy between the corps, the Bureau of Reclamation, and other Federal agencies,I am convinced that it is essential that some over-all agency be established by the Congress to bring about correlation of all undertakings for multi-purpose development, thereby affording the greatest benefits with the minimum expenditure of public and private funds.

An example of what might be accomplished in this way is exhibited by the recent formation of the New England-New York Interagency Committee, including representatives of all Federal agencies concerned in all the varied aspects of conservation; representatives of State agencies likewise concerned and representatives of the private interests also concerned and of the public. While this committee seems to be failing in reaching its highest possibilities owing to lack of funds and direct legal authority, it appears that this type of approach is the appropriate one. That is, the interests of various sections of the United States vary so much one from another that it seems desirable, rather than that one single Federal agency should have responsibility for all areas, that responsibility should be broken down by regions having relatively comparable problems.

This view seems to be supported by current events. Millions of dollars have been expended in the Mississippi and Missouri Valleys for the construction of levees and some flood-control dams, the futility of which is evident from the vast destruction by floods in 1951 and just now. When we compare this picture with that of the area under development of the Tennessee Valley Authority, where similar flood conditions have been well-nigh controlled, while tremendous supplies of electric power have been made available at minimum cost, it seems that the wisdom of the latter course has been proved beyond peradventure.

My observation of events leads me to the conclusion that the Congress long ago would have adopted some such policy in other areas if it had not been for

the opposition of special interests of one kind and another. And from what I have learned I believe that the chief source of opposition is the private electric utilities which, if they could be assured of the purchase of federally developed electric power at the busbar, would support heartily the multipurpose development of our great rivers.

My conclusion in this respect is predicated somewhat on my knowledge of the New England attitude as relates to the St. Lawrence seaway. In 1926 there was created a committee of 30, appointed 5 each by the 6 New England Governors, to investigate and report on the St. Lawrence project. Their report, issued in 1927, unanimously favored building the seaway, with attendant power development. At that time there was little advocacy of the present preference policy with regard to distribution of federally developed power and the expectation was that any St. Lawrence electric power would be at the disposal of the private utilities.

But in 1934, when the treaty was before the Senate for ratification, the same interests which in 1927 were favorable, were then hostile. I know this at first hand, because at the time I was stationed in the Senate Office Building as secretary to former United States Senator Fred H. Brown. The reason quite evidently was that the prospect was that, under the provisions of the Federal Water Power Act of 1920, as established under the policy of 1933 and following, electric power would not be at the exclusive disposition of the private utilities. And the same position is evidenced at present in connection with the conflict as to the disposition of additional power to be developed at Niagara and on the St. Lawrence.

From what I have written, please do not assume that I am an advocate of a public-power monopoly, for I am not. I believe that the needs of the country for electric power are so vast as to require the cooperation of all those concerned, Federal, State, municipal, cooperative, and private. But the problems connected with the control and beneficial use of our rivers are so great that it seems that, with their courses disregarding State lines as they do, the only agency of sufficient authority and financial ability to do the job is that of the Federal Government.

And, as I have said, even here the problems are so variant that the reasonable approach is through the agency of regional authorities.

There never seems to be any question but that the benefits conferred by river control should be for all the people concerned—flood control, soil conservation, pollution elimination, and the rest—with the exception of power. And I believe that this control, as concerned with the development of electric power, the cost of which can be self-liquidating as differentiated from the other types of benefit, should be so exercised as to assure that the benefits likewise should accrue to all the people.

Yours respectfully,

GEORGE H. DUNCAN,
President, New Hampshire Electric Cooperative.

CHAMBER OF COMMERCE OF THE UNITED STATES,
Washington, D. C., April 23, 1952.

Hon. ROBERT E. JONES, Jr.,
Chairman, Special Subcommittee To Study Civil Works, House Committee on Public Works, House Office Building, Washington 25, D. C.

DEAR MR. JONES: The Chamber of Commerce of the United States for many years has studied Federal participation in water resource development projects.

The Chamber's membership has adopted extensive policy declarations on water resources which I herewith make available to you and your colleagues.

We recognize that the subject of your subcommittee's study is a most complex and difficult problem, involving conflicts between laws, between Federal, State, and local agencies and between public and private power interests.

We hope that the conclusions of your subcommittee will result in the solution of some of these conflicts and in more equitable, efficient and economical methods of conserving and developing our water resources.

The attached statement summarizes the Chamber's attitude on all of these problems. I would appreciate it if you would make this statement a part of the record of your hearings.

Cordially yours,

CLARENCE R. MILES.

STATEMENT OF UNITED STATES CHAMBER ON WATER RESOURCE DEVELOPMENT

BENEFICIAL USE OF WATER

The Chamber believes that the beneficial use of water has become a composite problem, for the solution of which individuals and the local, State, and Federal Governments may wisely expend funds upon carefully planned projects, provided these projects stand the test of financially sound investments after all benefits, costs, and damages have been fully weighed.

Conservation and control of the waters of the United States, although in the national interest, are not the sole function of the Federal Government. On the contrary, that which can be accomplished by private initiative should be so done, and that which requires collective action should be done at the lowest governmental level practicable. The Federal Government should aid local governments and the States in the conservation and control of waters and itself engage in such activities only when the collective action of the whole Nation is necessary for accomplishment of the objectives.

HOOVER COMMISSION RECOMMENDATIONS

The Chamber does not agree with the recommendation of the Hoover Commission that efficiency and economy would be obtained by combining the civil functions of the Army engineers and the Bureau of Reclamation in a single agency. We believe that efficiency and economy can best be obtained by transferring the project planning functions from the Army engineers and the Bureau of Reclamation to Basin Interagency Committees with equal Federal and State representation and to a central Board of Impartial Analysis.

PROJECT PLANNING

The Chamber believes that the planning of water resources projects should be by major river-basin areas, to be implemented and developed through interstate compacts, basin interagency committees, and local conservancy districts.

We recommend the creation of Basin Interagency Committees to plan and program water resources development within the basins—each to include representatives of the Federal agencies concerned and of the States of the basin. The States, collectively, should have equal voting power with the Federal agencies, collectively. In this we differ from the recommendations of the President's Water Resources Commission, which proposed River Basin Commissions of nine members of which only two would be representative of State and local interests.

The chamber also recommends the creation of a national Board of Impartial Analysis (or Board of Review) to review and report to the Congress on the public and economic value, the priority of uses, the Federal and local contributions to capital requirements, and the timeliness of development of the basin plans and project proposals made by the basin interagency committees. It should also advise Congress on the assignment of all Federal construction work and operation of project facilities to the appropriate Federal agencies. This Board of Impartial Analysis should be made up of men of outstanding ability in various fields of water resources development and use, not already in the Government services. As it is advisory to the Congress, appointments to the Board should be made by the congressional committees on Public Works, Interior and Insular Affairs, and Agriculture, rather than by the President.

The chamber is unalterably opposed to Federal regional authorities or any Federal agency or organization that would encroach upon and usurp the jurisdiction of the States over their natural resources.

PROJECT AUTHORIZATION

The chamber recommends that all proposals for Federal water resource projects should present clear demonstrations to Congress that—

(*a*) The project will serve an urgent need involving the national interest, and

(*b*) The values, or benefits, to be created by a project are materially in excess of the cost, when compared on an average annual basis, and

(*c*) The cost will be distributed with due regard to the relative benefits within the respective areas of responsibility.

In the application of any cost-benefit ratio, "benefits" should be "net" benefits and should include those increases and decreases in value, resulting from the project, which are subject to sound accounting procedure. Other benefits and

detriments not subject to sound accounting procedure should be indicated as clearly as possible so that their possible influence on project feasibility may be weighed.

The report to the Congress should clearly state: (1) The estimated total cost of the project; (2) The estimated costs of actually fulfilling the respective functions of the projects; (3) The estimated allocations or assessments of costs against the respective functions; (4) The anticipated values of and revenues from each such function; and (5) The proposed application of all revenues, including interest proposed to be paid to the Treasury. Full disclosure should be made of all pertinent information, including the amount of the subsidy, if any, which the project should receive under the proposed plan, to the end that Congress may act with full information, that the costs shall be plainly stated, and that no subsidies shall be concealed.

Projects should be authorized only by Act of Congress. The athorization legislation should specify, on its face, the proportion of the investment to be allocated to each "benefit" or purpose. These allocations should cover both capital costs and annual expenses, including interest, operating expenses, depreciation, amortization, taxes, and every other element of expense. Provision should be made for compensating State and local governments for taxes lost on lands occupied by the Federal Government for purposes such as reclamation, hydro power and flood control. Wherever practicable, those benefited directly or indirectly, by any functions of a project, should be assessed for a proportionate part of the costs.

All authorized but uncompleted projects should have their cost analyses reexamined and be reappraised from time to time, in the light of changing price levels and economic conditions to make sure that: (1) The estimates are reasonably correct; (2) The probable benefits are commensurate with the reestimated costs; and (3) The projects will accomplish the declared purposes.

FEDERAL HYDRO POWER

The chamber believes that the Federal Government should not build any dams primarily for power purposes unless such projects are clearly in the public interest and are clearly beyond the reasonable scope of private enterprise, and should not generate electric power at any dam except as incidental to an appropriate function of the Federal Government. The Federal Government should not construct steam-electric plants or in any other way assume the responsibility of power supply to any section or area.

The chamber recommends that where power can be produced economically at a Federal multipurpose dam, the power should be disposed of at wholesale to existing local generating, transmitting, and distributing systems, by (1) Permitting the installation of power house and power-generating facilities under license in accordance with the Federal Water Power Act, with adequate annual charge for the use of the Federal property (as was done with early licenses under the act); or (2) Leasing the generating facilities and the right to use the falling water (as was done at Hoover Dam); or (3) Selling the power at the powerhouse under long-term contracts without discrimination as to price and without discrimination or preference among the applicants for power contracts. Only when the Federal Government is unable to dispose of power at the dam should it, under specific congressional authorization and appropriation, construct transmission facilities (without duplication of existing transmission facilities) necessary to deliver and sell the power to local distributors, likewise without discrimination.

Both electric companies and Government power agencies are engaged in the utility business. They make identical use of the Federal Government's interest in land and water resources by developing hydroelectric power. They render practically identical services to the public, and they have practically the same effect on interstate commerce. The chamber therefore recommends that such Federal regulations of the power industry as are deemed necessary by the Congress be applied to the utility business as a whole, without discrimination or preference to any particular group of operators or consumers.

The Comptroller General should be vested with jurisdiction over the application of all revenues from multipurpose projects, with authority to require the application of such revenues to the purposes prescribed by Congress. Interest collected through the rates charged power consumers should be paid over to the Treasury as hire for the Federal money invested, and should not be applied or accounted for as though available for debt retirement.

FLOOD CONTROL

The chamber believes that flood control is a composite water-resource problem which should be viewed in its entirety, and in the solution of which Federal, State, and local governments should participate on a cooperative basis, with due regard to the benefits. There should be provision for direct assessment of a portion of the cost against beneficiaries wherever practicable. There should be a maximum of local control, increasing toward the headwaters and finally reaching the landowner.

The aim of flood-control planning should be to reduce flood damage to the greatest extent that is economically feasible. Big dams and levees have been the primary tools of flood control in the past. Recent developments and experience indicate that increasing consideration should be given and funds allocated to the other methods of flood control, such as flood-plain clearance, up-stream dams, farm ponds and reservoirs, ground-water storage, and watershed soil protection.

The Nation's flood hazards should be surveyed on a river-basin basis to determine the areas in greatest danger. Expenditures for flood-reduction measures should accord priority to the more vulnerable spots. The aim should be to protect the greatest number of lives and the most property with a given expenditure of public funds.

RECOGNITION OF STATE RIGHTS

The chamber believes that in the exercise of sovereignty over equitable portions of the river flows of interstate streams the several States should control, allocate, and distribute water to users within their boundaries according to State laws and customs, and such powers of the States should not be abridged, modified, or superseded by Federal courts, laws, or agencies.

Where two or more States on the same stream system are involved, the allocation between the States of the benefits arising from the river flow, including benefits from consumptive use of the water, should be made by interstate compacts through the application of the doctrine of "equitable apportionment."

AMERICAN PUBLIC POWER ASSOCIATION,
Washington, D. C., May 19, 1952.

Hon. ROBERT E. JONES, Jr.,
The House of Representatives, Washington, D. C.

DEAR CONGRESSMAN JONES: This association, which represents over 700 local publicly owned electric systems throughout the country, is considerably interested in the hearings which your special subcommittee to study civil works has been holding in connection with the policies, practices, and procedures regarding authorization and construction of river and harbor and flood-control projects.

In connection with this study of your subcommittee, I would like to submit our statement of recommendations for a Federal power policy, which was adopted by our board of directors on September 26, 1949. Many of our recommendations, I am confident, have a bearing on the policies and procedures which your subcommittee is reviewing.

I am also enclosing for your information copies of resolutions Nos. 4, 7, 8, 9, 10, 11, and 12, which were adopted on May 1, 1952, at our association's annual convention in Seattle, Wash. I believe these resolutions also have a bearing on the work of your subcommittee.

Should you find it appropriate to do so, we would be most pleased if our statement of a Federal power policy and the enclosed resolutions could be inserted in the published record of your hearings.

If you have any further questions about the policies of our organization, we would be gratified to have the opportunity of elaborating on the enclosed material.

Thanking you for your consideration, I am

Sincerely,

ALEX RADIN.

FEDERAL POWER POLICY

RECOMMENDATIONS ON THE GENERATION, TRANSMISSION, AND SALE OF FEDERAL ELECTRIC POWER

(American Public Power Association)

INTRODUCTION

For almost 40 years, the power program of our Federal Government has grown like Topsy. It has been influenced, especially during the last 20 years, by major amendments to existing laws as well as new legislation, such as the TVA Act, designed to apply only to particular regions or to solve special problems, such as electrifying our farm areas. Until 1930, power was an incidental by-product from dams designed primarily for flood control, navigation, irrigation, and providing water for domestic and municipal purposes. Up to that time, the total installed kilowatts in Federal plants was only 226,000. Beginning with Hoover Dam on the Colorado River, there developed the concept of huge dams, vast reservoirs for water storage, large blocks of low-cost hydropower, and the need for over-all control of a river basin, to attain maximum benefits from the investment. The impact of these large blocks of power on the economy of an area quickly became apparent.

Today, according to the Federal Power Commission, there are in operation, under construction, or authorized, almost 17,000,000 kilowatts of federally owned generating capacity, and the Secretary of the Interior has stated that by 1960, some 30,000,000 additional kilowatts can reasonably be anticipated.

Since municipalities, cooperatives, and other public agencies now have preference under the law in the disposition of this power, their stake in the policy followed becomes readily evident.

Accordingly, to protect their present interests, and to assure the economic feasibility and soundness of the program, the American Public Power Association has drafted these recommendations for a Federal power policy. Adoption of the statement reproduced below marks one of the most significant actions to be taken by APPA in its 9-year history. It is hoped that this statement will help guide the drafting of legislation in this sphere of governmental activity which is witnessing such a phenomenal growth.

STATEMENT OF RECOMMENDATIONS

In the construction of electric-power facilities and in the generation, transmission, and sale of electric power, the United States should adhere to the following principles, that is:

1. Development of hydroelectric power sites

1. In order to conserve irreplaceable fuel supplies, every site for the generation of hydroelectric power should be developed if and when such development is economically feasible. In the case of projects to be constructed primarily for some other purpose, such as navigation or flood control, maximum power production consistent with such primary purposes should be provided.

2. Hydroelectric power sites are natural resources of the people of the United States and in their development preference should be given to public agencies. Plans for developments should provide for maximum economic utilization of stream systems. Local public agencies should have preference in making developments that fit into such plans.

3. Recapture provisions should not apply in the case of grants and licenses given to any public agency. The only useful purpose of a recapture clause is to reserve a natural resource for the public benefit, and where the people themselves undertake the development the need for the provision disappears.

4. In every case in which the United States has, in effect, preempted a stream and/or precluded local development of hydroelectric power, or assumed the obligation to provide a power supply to an area, then it is the duty of the United States to develop power under an orderly program which will anticipate the potential power demands and meet those demands as they arise.

5. The construction of any Federal dam or power generation plant should be preceded by authorization by act of Congress.

II. Economic feasibility and financing of Federal power projects

1. *Determination of feasibility.*—(*a*) The Congress should prescribe standards of economic feasibility for Federal power projects and these standards should be applied to all projects.

(*b*) With respect to any administrative determination of feasibility pursuant to standards prescribed by Congress, review should be provided by an independent agency.

(*c*) In determining economic feasibility, each project should stand upon its own merits, but the interrelation of the proposed project with other projects (existing and potential) within the areas should be fully evaluated.

(*d*) Minimum standards of feasibility should be such that power revenues, after payment of power operation, including depreciation, and maintenance expenses, should be adequate to provide for the payment of interest upon the capital investment of the United States chargeable to power and reasonably to insure the United States against loss of any part of such capital investment.

2. *Financing.*—In those cases in which the United States has precluded local development of a stream, or assumed the obligation to provide a power supply to an area, capital funds must be made available in such an orderly manner as to permit installation of economically justified generating facilities in anticipation of the potential power demands and in time to meet those demands as they arise.

III. Transmission lines and steam plants

1. *Regional integration.*—(*a*) The United States should construct and own fuel-burning plants, integrated with its hydroelectric plants whenever necessary for the efficient economical operation of its hydroelectric plants.

(*b*) The United States should construct and own any transmission lines economically necessary for the proper integration of Federal hydroelectric or fuel-burning plants.

(*c*) Integration policies should be directed toward benefiting the ultimate consumer and where integration of a Federal hydroelectric plant with the production facilities of a local publicly owned distributing system will better serve the ultimate consumer, such integration should be preferred to integration exclusively with other federally owned generating plants.

2. *Transmission to load centers.*—(*a*) The United States should construct and own transmission facilities (within the limits of economic feasibility) in every case where such construction and ownership is necessary to provide service, upon reasonable terms, to public agencies and cooperatives accorded preference by acts of Congress.

(*b*) Local public agencies and cooperatives should have a preferred right to construct transmission facilities to load centers in all cases where the local agencies are willing to provide transmission upon reasonable terms to customers within the area entitled to preference by acts of Congress.

IV. Power sales

1. *Sales to ultimate consumers.*—The United States should not engage in the distribution of electric energy to ultimate consumers (other than agencies and instrumentalities of the United States) if such consumers can reasonably and adequately be served by any local public agency or cooperative.

2. *Preferential rights.*—(*a*) In the sale of power, public agencies and cooperatives should have preference.

(*b*) In the sale of power, public agenies and cooperatives taking power for direct distribution to ultimate consumers should be preferred to all others.

3. *Contracts.*—Contracts of Federal agencies with privately owned utilities should be limited in time and should contain provisions for modification upon reasonable terms to the extent necessary to protect the preference of public agencies and cooperatives within the area.

4. *Rates.*—Power from Federal projects should be sold at the lowest possible rates consistent with sound business principles. Rates for power produced at multiple-purpose projects should be sufficient to meet all costs properly chargeable to power, but should not be burdened with any costs properly chargeable to any other purpose: *Provided, however,* That when irrigation is one of the joint purposes, then power revenues may properly be used to pay that portion, if any, of the capital costs properly chargeable to irrigation which is beyond the ability of the irrigators to pay; provided the total capital costs paid from power revenues (those chargeable to power plus those chargeable to irrigation but paid from power revenues) shall never exceed the amount for which a comparable supply of power could have been developed had irrigation not been one of the purposes of the project.

V. Multiple-purpose projects

1. *Allocation of capital.*—(*a*) Congress should fix policies and practice with respect to the allocation of capital at Federal multiple-purpose projects and these policies and practices should be uniformly applied upon all projects.

(*b*) All administrative action with respect to capital allocations should be made subject to review.

VI. Recognition of local interest in Federal projects for the utilization or control of water

1. *Investigation and reports respecting proposed water projects.*—The United States should at all times recognize the rights of the States in determining the development of the watersheds within their borders and their interests and rights in water utilization. To this end, investigations concerning any proposed project for the utilization and control of water should be conducted in such a manner as to make available currently to every affected State information developed by the investigation and opportunity for maximum consultation and cooperation. Similarly, reports concerning any such project should be submitted to every affected State for comment, criticism, or recommendation prior to the authorization of any construction work upon the proposed project, or, if the report be for submission to the Congress, before such submission.

2. *Local participation in operation of Federal projects.*—The local interest in every Federal project for the utilization and control of water should receive recognition, and local participation should be invited to the greatest extent consistent with the responsibilities of the United States. Such local participation may be achieved through local public hearings, local representation on consulting and administrative boards and councils, and by other means.

VII. Rural electrification

1. It is in the public interest to electrify our rural areas as rapidly as possible. Sufficient funds—both for administrative and loan purposes—should be provided by the Congress as needed.

2. Present powers of REA to finance generating plants and transmission lines, and acquire properties, should be continued.

3. More extensive financing of research in rural utilization of electric power should be undertaken by appropriate agencies.

Adopted by the board of directors, American Public Power Association, September 26, 1949, at Washington, D. C.

RESOLUTIONS OF THE AMERICAN PUBLIC POWER ASSOCIATION, SEATTLE, WASH., MAY 1, 1952

RESOLUTION NO. 4—NORTHWEST POWER PROGRAM

Whereas the Federal Government has become a major supplier of power to the Pacific Northwest through its construction and operation of the Grand Coulee and Bonneville dams and the Bonneville Power Administration transmission network; and

Whereas the development of multipurpose projects on the Columbia River and its tributaries at other points is in progress, namely, at Hungry Horse, Albeni Falls, Chief Joseph, and McNary sites; and

Whereas the industrial development of the Northwest has been stimulated in these developments by war needs and the introduction into the Northwest of tremendous industrial plants and establishments producing materials and equipment essential to defense, to the extent that demands for electric power for these and for the region's normal growth have increased more rapidly than can be met by the present rate of progress in the construction of power-producing plants now authorized and/or being built by the Government; and

Whereas this has resulted in an area power-shortage situation likely to last throughout a considerable period of years in spite of the efforts of non-Federal agencies to add to their own electric power generating capacity by the construction of plants of their own; and

Whereas this situation, which is not of the Northwest's making, will retard the sound economic development of the area, and reduce its ability to contribute adequately to national defense: Now, therefore, be it

Resolved, That the American Public Power Association urge the Congress of the United States of America to make available and to restore where necessary

the appropriations now requested and required to maintain on schedule as now determined the progress on its construction projects on the Columbia River now under way and to give immediate consideration to appropriations to start new projects which it has already authorized but has not begun; and be it

Resolved further, That the association by proper representation to Congress urge the Federal Government to facilitate by new legislation if necessary, and by any other practical and proper measures, the construction by non-Federal public agencies of power developments not presently authorized for development by the Federal Government to the end that the people of the Pacific Northwest may meet their mounting power requirements by their own development of resources within their area.

RESOLUTION NO. 7—PUBLIC POWER RELATIONSHIP BETWEEN UNITED STATES AND LOCAL PUBLIC AGENCIES

Whereas the American Public Power Association is a national organization of publicly owned electric systems dedicated to—

(1) Promote the efficiency of publicly owned electric systems;

(2) Achieve greater cooperation between public plants;

(3) Protect the interests of public-owned utilities; and

(4) Render services to its members in the field of management and operation, engineering, design, construction, research, accounting and commercial practice, and legal policy; and

Whereas the American Public Power Association, on September 26, 1949, adopted a Federal power policy, which policy was designed to establish a mutual relationship between the Federal and local agencies—namely, municipalities, cooperatives, and other public-power agencies—whereby the rights of the local public agencies should be recognized in the development of hydroelectric resources and local public agencies should construct transmission lines and market federally produced power to the extent that they are willing and able to do so; and

Whereas there exist local public agencies for the generation, transmission, and distribution of electric power which do not depend upon the Federal Government for any financing and which operate integrated power systems in various sections of the United States and are now supplying the basic electrical requirements in the areas which they serve; and

Whereas the present policy of the Department of the Interior, which is charged with marketing federally produced power, as expressed in the Memorandum on Power Policy, dated January 3, 1946, does not give adequate recognition to the existence of public-power agencies operating widespread systems; and

Whereas conflicts have developed, and may continue to develop, where the actions of the Federal Government result in seriously jeopardizing the very existence of public-power agencies and impair their ability to render low-cost electric service on an area basis; and

Whereas the development of an equitable relationship and cooperation between Federal and local public-power agencies is necessary for the continued success of public power and the preservation of the financial integrity of these local public-power agencies and the prevention of complete domination by the Federal Government in the field of the supply and transmission of public power; Now, therefore be it

Resolved, That it be the sense of this association:

1. That the duplication of facilities between Federal and local public power agencies is uneconomic and undesirable;

2. That local public-power agencies should cooperate to utilize and market, to the maximum extent economically feasible, the federally produced electric power;

3. That generating capacity of local public-power agencies should be integrated to the maximum extent economically feasible with Federal installations to secure the greatest over-all benefits to the ultimate electric user;

4. That the Department of the Interior, which is charged with the marketing of federally produced electric power in many sections of the Nation, should adopt a policy with respect to local public-power agencies, which policy be designed to—

(*a*) Encourage the preservation and expansion of local public-power agencies to the end that the maximum of local control is retained;

(*b*) Provide for local public-power agencies to construct the necessary transmission lines and steam generating stations to properly serve their

load to the maximum extent they are able and willing to do so upon terms that are fair and equitable to other public agencies served by such facilities;

(*c*) Serve customers other than public agencies directly, only to the extent that the local public-power agencies are not willing and able to do so;

(*d*) Avoid restrictions and limitations in their contract relationships which tend to centralize control in Federal agencies and deny the right of local public-power agencies to develop their own systems and manage their own affairs;

5. That this association offer its full cooperation to the Secretary of the Interior in solving this mutual problem.

RESOLUTION NO. 8—WATER RESOURCES POLICY

Whereas the American Public Power Association and its members have long recognized the urgent necessity for legislation prescribing a comprehensive, coherent, and uniform policy with respect to the participation of the United States and its agencies in the development and utilization of hydroelectric power; and

Whereas the President's Water Resources Policy Commission, created by Executive order of the President of the United States dated January 3, 1950, after a thorough study of the problem, has drafted and made available to the Congress a proposed statute which prescribes such a policy with respect to water resources as a whole, including water-power resources: Now, therefore, be it

Resolved, That the Congress of the United States, and particularly the Committee on Interior and Insular Affairs and the Committee on Public Works of the Senate and of the House of Representatives, be urged to give immediate consideration to the Water Resources Act of 1951, proposed by the President's Water Resources Policy Commission; and be it further

Resolved, That the Secretary be directed to forward to the chairman of each of the committees of Congress above named a copy of this resolution.

RESOLUTION NO. 9—TAXATION

Whereas proposals have been made that the Federal Government tax the interest on State and local bonds, tax the sale of electricity by local governments, and tax the revenues received by these local governments from the operation of public-owned utilities; and

Whereas the support for such proposals originates with private power companies and other forces opposed to power development by local governmental agencies; and

Whereas such taxes would be beyond the constitutional powers of the Federal Government: Now, therefore, be it

Resolved, That the American Public Power Association records its opposition to the imposition by the Federal Government of taxes upon the borrowings, the revenues, or the operations of the State governments and their political subdivisions.

RESOLUTION NO. 10—DIVERSION OF INTEREST COMPONENT

The American Public Power Association, composed of the principal locally owned public power systems of the United States, is concerned by the discredit which is being cast on public power by certain accounting practices of the Bureau of Reclamation, and again asks that these practices be reformed.

In effect, the Reclamation Bureau keeps two sets of books.

On the one hand, it fixes the power rates which it charges public agencies and other customers on a basis which collects enough money from these customers to pay interest upon that portion of the national debt which represents the power investment in a project and to repay that debt. This is sound; and if the money so collected were properly accounted for, the Federal taxpayer would be kept whole and the cause of public power would be well served.

On the other hand, the Reclamation Bureau, having collected interest as hire for the Federal money invested in power, actually applies this interest to the retirement of the capital which it has invested in irrigation. Thus, the interest

money that the consumers pay is not made available to the Treasury for the payment of interest on the national debt. Instead, the Federal taxpayers, including these same power consumers, must provide the money in taxes to replace the interest which is collected in power rates but which is diverted to subsidize irrigation.

No member of the American Public Power Association would dare account for public money in that fashion in the conduct of its own business.

In the aggregate, the sums involved in diversion of the interest component and its replacement by added taxes amount to many billions of dollars, in Reclamation Bureau projects now proposed.

The American Public Power Association again asks that this practice be corrected, and condemns the diversion of the interest component as a concealed subsidy.

This association reaffirms the policy stated in its Federal power policy statement of 1949, that it does not oppose a reasonable subsidy to irrigation from power revenues, but it insists that any subsidy be clearly set forth in reports to Congress and be specifically approved as such in the authorization of the project.

RESOLUTION NO. 11—FEDERAL POWER COMMISSION JURISDICTION

Whereas Senate bill S. 1789, introduced in the Eighty-second Congress, is now pending before the current session of Congress; and

Whereas said bill is in accord with resolution No. 6 adopted by the American Public Power Association at its annual meeting held in Chattanooga, Tenn., in May 1951; and

Whereas this bill in principle affirms the sovereignty of the States over their streams and eliminates Federal interference therewith, when Federal interests are not adversely affected: Therefore be it

Resolved, That this association endorses said bill and recommends its passage by Congress, in substantially the form in which it is now pending, with only such amendments thereto as will make it clearly applicable to all streams that are not navigable in fact, and to all navigable streams when the project constructed or to be constructed by a State or municipality does not materially and adversely affect navigation.

RESOLUTION NO 12—PREFERENCE CLAUSE

Whereas this association has consistently endorsed the principle of preference to public agencies and cooperatives in the sale of power generated at Federal dams, as embodied in various Federal statutes, the latest being the Flood Control Act of 1944; and

Whereas concerted action by various groups appears to be now under way, or is in the offing, to repeal the said preference provisions: Now, therefore, be it

Resolved, That this association reaffirms and reendorses the said preference clause to assure that all savings possible from federally produced power be for the benefit of the ultimate consumers.

(Whereupon, at 11:10 a. m., the subcommittee adjourned, subject to the call of the Chair.)

×